AIR CONDITIONING HEATING & REFRIGERATION NEWS
The Newspaper of the Industry
RESIDENTIAL — COMMERCIAL — INDUSTRIAL
January 12, 1959
Issued every Monday at 450 West Fort St., Detroit 26, Michigan
Established 1926
Member, Associated Business Publications — ABP — ABC — Member, Audit Bureau of Circulations
Vol. 86, No. 2, Serial No. 1,555
Subscription Price, $6 Per Year (U. S. and Canada). Foreign: $10.00 Per Year.

Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Stories of the Week
Opportunities Abroad
Promise of the 'Common Market'
How It Affects Us
Bigger Now Than Sputnik
They Are Not Inexperienced
The Military Picture
Mankind Does Learn From Experience

Stories of the Week

Formidable sign facing all comers to the desk of Drayer-Hanson's Mr. Clancy Pollock hits a nefarious nail on a cute cuticle. It reads:

"Problems brought to me will be more easily solved, if accompanied by a solution."

"Please make this withdrawal," instructed the young wife, "from my husband's half of our joint checking account."

Opportunities Abroad

There's strong reason to believe Congress will act soon to encourage even greater foreign investments by individual American businessmen and by corporations.

Tax concessions, tax postponements, tax rebates, even tax forgiveness all are being considered. There are three reasons for such legislation:

1. American *business* investment of money and know-how should take the pressure off the *government* to continue costly foreign aid give-aways.

2. The more world trade, the better the chances for peace.

3. Europe's "Common Market" (more about this later) has become a reality; and now 21 Latin American nations are considering the formation of a similar "Common Market."

Promise of the 'Common Market'

Just what is this European "Common Market," and how does it affect us?

Jan. 1 six contiguous European nations — France, West Germany, Italy, Belgium, the Netherlands, and Luxemburg — entered into economic union.

Gradually these six nations will cut tariffs and lower trade barriers amongst themselves until they'll achieve a free market.

(A free market is what we have inside the United States — no tariffs or barricades to commerce between the 49 states.)

(Concluded on Page 8, Col. 1)

Kelvinator Showing New Room Units

Signal-Filter Feature, Portable Unit Offered

CHICAGO—A broad new line of room air conditioners for 1959 has been announced by Kelvinator, including a portable model, a "Space-Saver" series, and an exclusive new feature combination, "Filtermatic Signal" and an electro-magnetic air filter.

It was also announced at the opening of the International Home Furnishings Market here that a new 1959 "Foodarama" by Kelvinator provides 18 cu. ft. of refrigerator and freezer food storage in a cabinet only 41 in. wide which can be built in.

The new room cooler line consists of 17 models in sizes ranging from the 4,200 B.t.u. portable to 19,000 B.t.u. "Masterpiece" models, plus four reverse cycle all-season models, accord-

(Concluded on Back Page, Col. 1)

American-Standard Promotes Executives

NEW YORK CITY—In one of a series of executive changes at American-Standard, Clyde H. Wilkinson was appointed acting president of the Air Conditioning Div., it was announced by Joseph A. Grazier, corporation president.

Wilkinson succeeds Joseph J. Decker who left to assume the presidency of the Plumbing & Heating Div. Wilkinson has been manager of water heater product lines since July, 1955, when he joined American-Standard.

William A. Bauer, formerly president of the Plumbing & Heating Div., has been named group vice president of home products division. Donald D. Couch, formerly vice president

(Concluded on Page 4, Col. 5)

'Fool Proof Air Conditioners'

Wyckoff Tells of Manufacturers' Moves To Better Products; Calls for Improved Installation

NEW ORLEANS—In a blunt, hard-hitting discussion that probably offered more practical, down-to-earth information than any paper presented before an industry technical society within memory, Airtemp's Chief Engineer Paul W. Wyckoff told members of the American Society of Refrigerating Engineers that manufacturers are moving to improve "the toughness and reliability" of their products, but must do more in that respect, and must also require continuous improvement in the character of field installations.

With his talk titled "Design Search for the Foolproof Air Conditioner," Wyckoff described the kind of difficulties in actual operation that have brought unsatisfactory operation and field failures. He then explained what he believed can be "factory built-in remedies," and in this discussion of problems and solutions offered much that can be useful to field installers.

He pointed out that "the type of installation and the character of the installer himself have a great effect on the proper operation and reliability of the equipment." Pointing out that manufacturers are continually working on the product "to make it more rugged and foolproof, and are designing into units features to make them workable even when badly installed," his conclusion emphasized that "a corresponding up-

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'59 Perfection Line Features High Styling on Oil Furnaces

CLEVELAND—A completely new line of oil furnaces enclosed in a cabinet featuring the same styling as Perfection's gas furnace that appeared at the Brussels World's Fair was introduced to Perfection Industries, Inc. sales representatives here recently.

Also introduced were the company's 1959 lines of gas furnaces, residential air conditioning, heat pumps, wall furnaces, space heaters, and other residential products.

The new oil furnace line consists of 18 models divided into three series and ranging in capacity from 84,000 to 166,000 B.t.u.

The Regulaire series, with four upflow and three counterflow models, features a newly developed "Electro-Magic" blower control to give more positive air discharge control in any type of installation.

The Stylist series has four upflow and four counterflow models. The Trimline series has five upflow models—one direct driven and four belt driven—and five counterflow models—two direct driven and three belt driven.

All models have an improved burner and built-in, factory-wired stack controls and draft regulator.

The 1959 gas furnace line contains 29 models, all featuring a newly developed "Heat Bank" heat exchanger.

The Regulaire series, with three counterflow models added

(Concluded on Page 21, Col. 1)

Supervisors Who Hold Union Offices Embroil Contractors with NLRB

DETROIT — The National Labor Relations Board has charged seven Detroit area plumbing and heating contractors, the Detroit Association of Plumbing Contractors, and the Mechanical Contractors Association of Detroit with illegal interference with the affairs of Local 636 of the United Association of Plumbers and Pipefitters.

The charge is based on the fact that 10 supervisory employes of these firms have held key elective or appointive offices in the local in the past two years. At the same time, they held the right to hire and fire for their companies. This is an unfair labor practice, says NLRB Counsel Robert Pisarski.

In both 1957 and 1958, he also alleges, two of the accused firms caused certain of their supervisory personnel to participate as agents of the union in contract negotiations conducted with the plumbing and mechanical contractors associations.

Defendant contractors are the

(Concluded on Page 21, Col. 3)

Westinghouse Bows New '59 'Mobilaires'

Unveils Refrigerators Made by New Process

CHICAGO — Westinghouse Electric Corp. last week introduced a new room air conditioner line which is divided into two basic designs—the "Mobilaire Super" and the "Mobilaire Deluxe," each having four models.

The company also unveiled two new refrigerators made by a new process which bonds the outside cabinet, inner lining, and insulation into one solid piece. The two models, both designed for either built-in or free-standing installation, are said to be lighter than conventional refrigerators.

In addition, an all new, completely automatic defrosting refrigerator-freezer combination was shown for the first time by Westinghouse. The 16-cu. ft. model is claimed to assure no frost in the refrigerator or freezer—ever.

The new room air conditioner

(Concluded on Page 18, Col. 1)

Ranco Planning To Acquire Wilcolator

COLUMBUS, Ohio—The annual meeting of the shareholders of Ranco, Inc. has been postponed from Jan. 27 to Feb. 27 because Ranco has made a proposal to acquire all of the capital stock of The Wilcolator Co. and there are a number of necessary procedures incident to this proposal, Ranco announced.

The acquisition would be accomplished by an exchange of shares. It is proposed to value the shares of each Wilcolator shareholder at $200 a share, for one-half of which value the Wilcolator shareholders will receive Ranco $50, 5% Series A convertible preferred, while

(Concluded on Page 21, Col. 4)

Cooling, Heating Products Appear At Builders Show

CHICAGO — Many new 1959 heating and air conditioning products for the home are scheduled to make their bow to home builders at the annual Builders Show to be staged here Jan. 18-22.

The Show will coincide with the annual convention of the National Association of Home Builders. As in the past, activities and displays will be spread over the Conrad Hilton hotel, Sherman hotel, and the Coliseum.

No pre-show list of exhibitors

(Concluded on Page 21, Col. 4)

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Marquette U. Plans 2-Day Heating, Air Conditioning, Refrigeration Conference

MILWAUKEE — As part of its 50th anniversary celebration, the Marquette University College of Engineering will stage a two-day heating, air conditioning, and refrigeration conference Feb. 16 and 17.

The conference is open to all practicing engineers and associated personnel. Registration fee is $20.

Ten industry speakers are slated for the conference.

After a welcome by Dr. A. B. Drought, dean of the college of engineering, John E. Haines, vice president of Minneapolis-Honeywell Regulator Co., will discuss "Economic Considerations of Complete Year-Round Air Conditioning."

Dan D. Wile, vice president in charge of engineering for Recold Corp., will follow with "Psychrometric Charts — Past and Present." A. G. Dixon, executive vice president of Modine Mfg. Co., will outline "New Developments in High-Efficiency Heat Transfer Surfaces." Gilbert F. Carlson of Bell & Gossett Co.'s engineering department will talk on "High Temperature Water."

After cocktails and dinner, Monday, Feb. 16, Dr. Richard C. Jordan, professor and head of the department of mechanical engineering at the University of Minnesota, will discourse on "Air Conditioning and Refrigeration in Russia Today."

On Tuesday morning, Burgess H. Jennings, director of research at the ASHAE Research Laboratory in Cleveland, will start things off by describing "Instrumentation for Equipment Testing."

Harold W. Alyea, director of engineering, and William P. Chapman, director of research and development for the Johnson Service Co., will follow on "Automatic Controls."

After lunch, Robert E. Parker, vice president in charge of research for Ilg Electric Ventilating Co., will discuss "Noise Measurement and Control." Owen Kuhen, manager of Carrier Corp.'s absorption refrigeration division, will tell of "New Developments in Adsorbers and Absorption Refrigeration."

Interested persons can register by writing to Prof. Raymond J. Kipp, Marquette University College of Engineering, 1515 W. Wisconsin Ave., Milwaukee 3, Wis.

NAPC Board Protests Decision To Give Back-Panel Work To Sheet Metal Workers

WASHINGTON, D. C. — Protest against awarding jurisdiction of the installation of back panels for radiant fin tube to the Sheet Metal Workers was voted by the board of directors of the National Association of Plumbing Contractors recently.

The award was made in a recent decision by Joint Board for Settlement of Jurisdictional Disputes in the building trades industry.

The NAPC board planned to bring the matter to the attention of the Joint Industry Program Committee comprised of representatives of NAPC, the Mechanical Contractors Association of America, and the United Association (AFL-CIO).

In other actions, the board:

Pledged $10,000 to the Plumbing-Heating-Cooling Information Bureau.

Selected Detroit as the site for the 1961 NAPC convention on June 19-22. NAPC will convene in Miami Beach June 1-4 this year and will meet in Cleveland, June 20-23 in 1960.

Decided to again sell NAPC literature to non-members at list price. Members get a 20% discount.

Approved a decision not to affiliate with the Council of Mechanical Specialty Contractors, Inc. primarily in protest against the council's stand in favor of a single contract principle as opposed to bid separation, which NAPC favors.

Heard a report on a change in NAPC's scholarship policy to provide trade school scholarship opportunities as well as engineering college courses.

Voted to table action on participation in the Plumbing Engineering Council due to lack of support for the council in other segments of the plumbing industry.

SO HALSTEAD & MITCHELL ENGINEERS ASKED . . .

Halstead & Mitchell coils with Turbu-Flo fins are designed for rugged and long service life. And Turbu-Flo provides up to 15% more heat transfer capacity.

STEAM COILS are available in both standard and non-freeze types. WATER COILS are for use with chilled or hot water. DIRECT EXPANSION COILS are equipped with a pressure type distributor and circuited for minimum refrigerant pressure drop . . . will accommodate any make expansion valve, refrigerants 12 or 22. All coils are regularly available in from 1 to 8 rows deep, in finned heights of 12 to 36 inches, and in lengths up to 10 feet. Manifolding can be arranged for left, right or opposite-hand connections. Other sizes or special coil types can be provided to meet your specifications.

EXCLUSIVE, EFFICIENT TURBU-FLO

All coils feature the exclusive Turbu-Flo fins. Streamline design creates better air wash, lowering air film resistance and improving heat transfer; yet friction is at a minimum.

Turbu-Flo fins are made of aluminum (available in copper), mechanically bonded to seamless copper tubing.

Casings are of heavy gauge steel fully protected against corrosion or of heavy gauge aluminum. Surrounding flanges simplify ductwork installation.

Write for more specific information, delivery and prices. *Halstead & Mitchell, Bessemer Building, Pittsburgh 22, Pa.*

HM Halstead & Mitchell

Record-Breaking Quarter Expected By Airtemp Div.

DAYTON — Record-breaking first-quarter sales of Airtemp air conditioning and heating equipment were forecast by Paul M. Augenstein, president of Airtemp Div., Chrysler Corp.

"Figures for the first three months of 1959 already show more than a 50% increase in business over the same period in 1958," he said. "This tops the previous first-quarter sales record set by Airtemp in 1956."

Augenstein pointed out that the sales figures represent firm orders now on hand.

"Based on the unprecedented early results," he said, "we feel we are starting the best sales year in our 25-year history."

Philco Appoints John A. Rishel, Jr.

PHILADELPHIA — Appointment of John A. Rishel, Jr. as general manager, merchandising, Consumer Products Div., was announced by Henry E. Bowes, vice president, Marketing, Philco Corp.

Rishel replaces James J. Shallow who resigned.

Rishel joined Philco in 1957 as manager of the Refrigerator and Freezer Div. Later he was named marketing manager.

Mrs. Si J. Williams Dies After Surgery

CLEVELAND — Mrs. Si J. Williams died here Dec. 30, following major surgery. She was the wife of the well-known sales engineer who heads the company here bearing his name, and who is national program chairman of the American Society of Refrigerating Engineers. In addition to her husband, Mrs. Williams is survived by four children.

You Have More To Sell In The New...

1959 KELVINATOR

"Balanced-Comfort" Room Air Conditioners

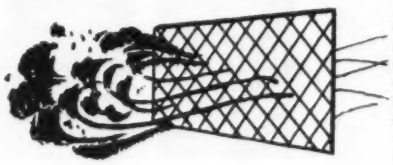
...with the most advanced filter ever developed!

CUSTOM MODELS in same capacities have styling and basic features of conventional deluxe models but sell at budget prices. Filter is replaceable fiber glass type.

NEW ELECTRO-MAGNETIC AIR FILTER WITH FILTERMATIC SIGNAL

Kelvinator salesmen have a superb selling advantage! Two engineering triumphs combine to give you the greatest room air conditioning advance in years!

1 ELECTRO-MAGNETIC AIR FILTER

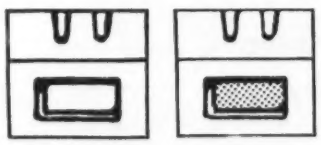


Kelvinator's new Electro-Magnetic Air Filter removes 95% of harmful dirt, dust and pollen as compared to 65% with ordinary filters. Electrostatic charge attracts and holds the smallest particles—even smoke solids—without transformers, rectifiers, or electrical hazard!

2 EXCLUSIVE FILTERMATIC SIGNAL

This Kelvinator achievement tells when the Electro-Magnetic Filter needs cleaning! Signal shows "white" when it's clean . . . signals "red" when it's dirty! Together, these advances provide the ultimate in air cleaning . . . and an unmatched sales story!

Give yourself the sales and profit advantages of these remarkable engineering achievements. Contact your Kelvinator representative today and get ready for your most successful summer selling season.



CLEAN FILTER Signal shows "White" when filter is clean.

DIRTY FILTER Signal shows "Red" when filter is dirty.

OTHER OUTSTANDING "MASTERPIECE" FEATURES: Adjustable automatic thermostat, fresh air intake and room air exhaust, two-directional cooling, two-speed fan. In 1, 1½, 2 and 2½ H.P. sizes.

FULL ½ H.P. PORTABLE DELIVERS 4200 BTU'S

. . . ideal bedroom size! Automatic thermostat, and plugs into any 115 volt outlet. Compact size fits any standard window.

"SPACE-SAVERS" ONLY 23″ WIDE, 14″ HIGH

. . . with low, low prices! Three 1 H.P. models: 115 volt, 7½ amp.; 115 volt, 12 amp.; and 230 volt. Each features 2-directional cooling, two-speed fan, fresh air intake.

"Balanced-Comfort" Design provides every wanted feature in addition!

- ★ MORE FREEDOM FROM HEAT! Correct balance between all parts of the system assures top cooling capacity!
- ★ MORE FREEDOM FROM HUMIDITY! Carefully balanced cooling coils wring more moisture from the air!
- ★ MORE FREEDOM FROM FAULTY CIRCULATION! Powerful fans and two-directional control give balanced air flow!
- ★ MORE FREEDOM FROM DIRT, DUST AND POLLEN! Electro-Magnetic Filter and Filtermatic Signal provide the cleanest possible air!

Built Better to Serve Better

Kelvinator

Division of American Motors Corp., Detroit 32, Mich.

LIVE BETTER ELECTRICALLY

AMERICAN MOTORS MEANS MORE FOR AMERICANS

Detroit Adopts Reciprocal Code

By George M. Hanning

DETROIT — The city of Detroit has adopted a new reciprocal refrigeration code that is expected to form the basis of reciprocal licensing between Detroit area communities.

The code was passed by the city council Dec. 30, approved by the mayor on Jan. 6, and took effect on Jan. 8.

Major differences between this and Detroit's previous code are dropping of the bond requirement and adopting the 1958 version of the ASA B-9.1 code by reference.

The City of Highland Park has amended its refrigeration code to include these provisions, too, according to Fred Stanley, refrigeration inspector for the city.

He said that the city's legal counsel advised against adopting the complete reciprocal code at the present time because certain provisions of the city's code are currently being contested in a court case and should not be changed until a decision has been made.

However, Stanley commented, the portions adopted will make Highland Park's code completely reciprocal as far as licensing is concerned.

The new code is one prepared by the recently-organized Reciprocal Refrigeration Council, which includes representatives of various Detroit area communities interested in reciprocal licensing and of industry organizations.

The council was formed on Nov. 12, 1958. A code committee went to work and developed a model refrigeration code. It was adopted by the council on Dec. 3. The council recommended the code to various communities in the area for adoption.

Detroit and Highland Park are the first communities to embrace it officially.

At present, refrigeration licensing is reciprocated — so that a refrigeration contractor licensed in one community can operate in another by merely registering his license there—by only five communities: Detroit, Highland Park, Dearborn, Farmington, and Farmington township.

Other communities that have participated in the newly-organized council are Dearborn township, Allen Park, Berkley, Royal Oak, East Detroit, Warren, and Redford Township.

More details on the code appeared on page 22 of the Dec. 15 issue of the NEWS. Previous stories on the Reciprocal Council appeared on page 1 of the Dec. 1 and Dec. 8 issues.

Carrier Reports 1958 Net Profit Up Slightly Despite Lower Sales Volume

SYRACUSE, N. Y. — Carrier Corp. reported that it made a somewhat larger net profit in fiscal 1958 than in the previous year even though the corporation's sales volume was lower by $11 million.

Earnings per share of common stock were $3.27 as opposed to $3.17 in fiscal 1957.

Key figures for the 12 months ended Oct. 31, 1958 are: orders booked, $243,799,000; net sales, $252,537,000; net profit, $7,548,000.

In fiscal 1957, orders booked amounted to $264,138,000 and net sales $263,426,000. The net profit was $7,268,000.

At the close of fiscal 1958, the corporation had a backlog of unfilled orders in the amount of $97,256,000. The comparable figure a year earlier was $105,994,000.

Cash or equivalent at the year end was in excess of $43 million and the ratio of current assets to liabilities was reported at about 3.6 to 1.

Cloud Wampler, board chairman, said preliminary industry figures "indicate that Carrier increased its market participation with respect to most major product lines."

Regarding 1959, Wampler stated: "In spite of the continuing profit squeeze, the corporation has budgeted a somewhat larger profit on approximately the same sales volume. But it should be pointed out that the first quarter of the year will be a period of nominal earnings."

It was also pointed out that Carrier plans to spend substantial sums in 1959 on programs such as the consolidation of certain production facilities, extensive market studies and research and long-term development of greater scope. Regarding the latter, a 31% increase in expenditures has been budgeted.

Wampler indicated that Carrier's $27.5 million expansion and improvement program will be practically completed in 1959 with the expenditure of approximately $7.5 million which has already been set aside for that purpose.

W. A. Bauer

C. H. Wilkinson

R. W. Lear

J. J. Decker

American - Standard

(Concluded from Page 1, Col. 2)

of marketing and commercial development, was appointed group vice president of engineered products division.

Robert W. Lear has been named director of marketing services for the corporation. He was replaced as general marketing manager for the Plumbing & Heating Div. by Robert W. Williams, according to D. J. Quinn, vice president of marketing and sales.

Williams joined American-Standard in 1953, when he was appointed manager of advertising and sales promotion for the Plumbing & Heating Div. He is succeeded in that post by Robert W. Prinslow. Prinslow joined the company in 1954, and has been advertising and promotion supervisor of heating and cooling.

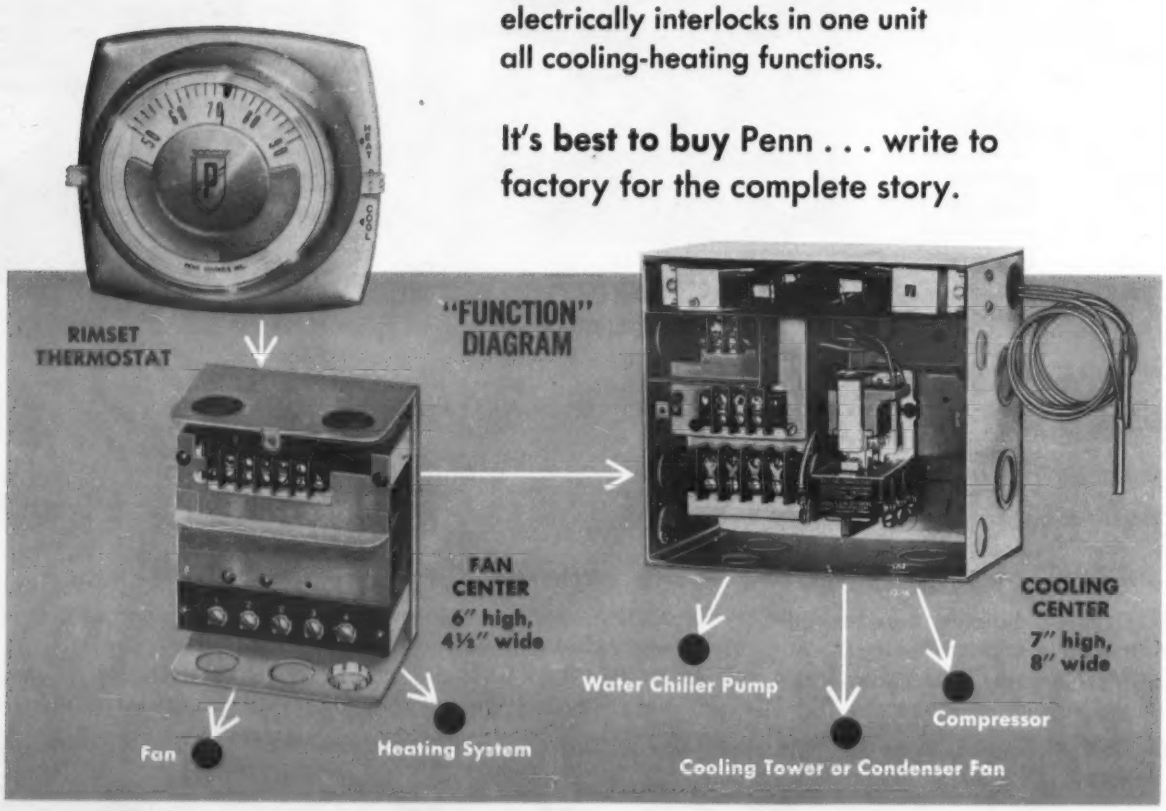
NOW...A BETTER WAY to control air conditioning!

For all residential air conditioning with remote condensing units . . . you can do the job better and more simply with these three versatile Penn controls.

RIMSET thermostat . . . with its interchangeable sub-bases . . . handles 12 different cooling and heating jobs. FAN and COOLING CENTERS . . . with their factory-wired internal circuits . . . are compact and save installation time.

For self-contained air conditioning systems, the Penn SYSTEM CENTER electrically interlocks in one unit all cooling-heating functions.

It's **best to buy** Penn . . . write to factory for the complete story.



PENN CONTROLS, INC. Goshen, Indiana

EXPORT DIVISION: 27 E. 38th ST., NEW YORK, N.Y.

AUTOMATIC CONTROLS FOR HEATING, REFRIGERATION, AIR CONDITIONING, APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

List Program for RSES Workshop At Calif. Poly

LOS ANGELES — The program for the first annual RSES Workshop to be held at California State Polytechnic college in San Luis Obispo Jan. 23-24 was announced here by Hal Jarvis, educational chairman for the California Association, Refrigeration Service Engineers Society.

The program for this educational session is as follows:

"Good Piping Practice"—Norman W. Sharpe, California State Polytechnic college.

"Servicing the Reciprocating Compressor" — John L. Zant, Copeland Refrigeration Corp.

"Proper Use of the Vacuum Pump"—R. A. Woltman, Kinney Vacuum Pump Corp.

"Servicing the Hermetic Unit" —Tom Pendergast, Employers Insurance Service, Inc.

"Air Conditioning Controls" —Leo Laskowski, Minneapolis-Honeywell Regulator Co.

"Diagnosing the Sick System" —John Spence, Hussmann Refrigeration, Inc.

"The Moisture Menace in the Refrigeration System" — P. J. McCarty, Sporlan Valve Co.

"Pumps — Centrifugal and Low Head Pressure"—Cy Otterholm, Richard S. Dawson Co. (Bell & Gossett, Los Angeles).

"Heat Rejection" — H .A. Halls, Recold Corp.

BHC Names Officers, Mitchell In '59 Pres.

NEW YORK CITY — Marvin E. Mitchell, vice president in charge of sales of Weil-McLain Co., is the new president of the national Better Heating-Cooling Council.

Retiring president John H. White, president of Taco Heaters, Inc., is new chairman of the group's membership committee.

Named to the board of directors and chairman of the plans board was Michael J. Murray, division sales manager, John J. Nesbitt, Inc.

Re-elected as vice presidents of BHC were Gordon J. Andrew, president of the wholesale firm of W. T. Andrew Co., Detroit, and W. A. Burbine, manager, merchandising, heating products, Crane Co., Chicago. Andrew is a former president of the Central Supply Association, and represents that group on BHC's board of directors.

Franklin Greene, BHC's executive director, has been named secretary, and Robert E. Ferry, general manager of the Institute of Boiler and Radiator Mfrs., treasurer.

In addition to Mitchell, Murray, White, Andrew, and Burbine, BHC's new board of directors includes Paul K. Addams, Fitzgibbons Boiler Co.; Carroll M. Baumgardner, National-U.S. Radiator Corp.; Virgil A. Good, Burnham Corp.; James H. Legg, Federal Boiler Co., Inc.; Milton Lundgren, Vulcan Radiator Co.; R. Edwin Moore, Bell & Gossett Co.; Daniel J. Quinn, American-Standard; John E. Reed, H. B. Smith Co., Inc.; and Alfred Whittell, Jr., Raypak Co., Inc.

Refrigeration Service Firm Expands Into Electrical Wiring

NEW ORLEANS—Airco Refrigeration Service, Inc. has established a department which will install wiring in homes and in industrial and commercial structures and furnish appliance wiring, according to George Lewis, general manager.

The new electrical contracting and electrical service department offers to rewire the average 5-room house for as little as $9.50 per month with no down payment required, it was reported.

Discuss Design of Indoor Environment

LOS ANGELES — University of California at Los Angeles will sponsor a joint conference Feb. 2-3 on "Designing the Indoor Environment."

The conference is planned for engineers, architects, builders, and community planners.

Engineering extension is handling arrangements. Information may be obtained from Dr. Sam Houston of Engineering extension, 3116 Engineering building, University of California, Los Angeles 24.

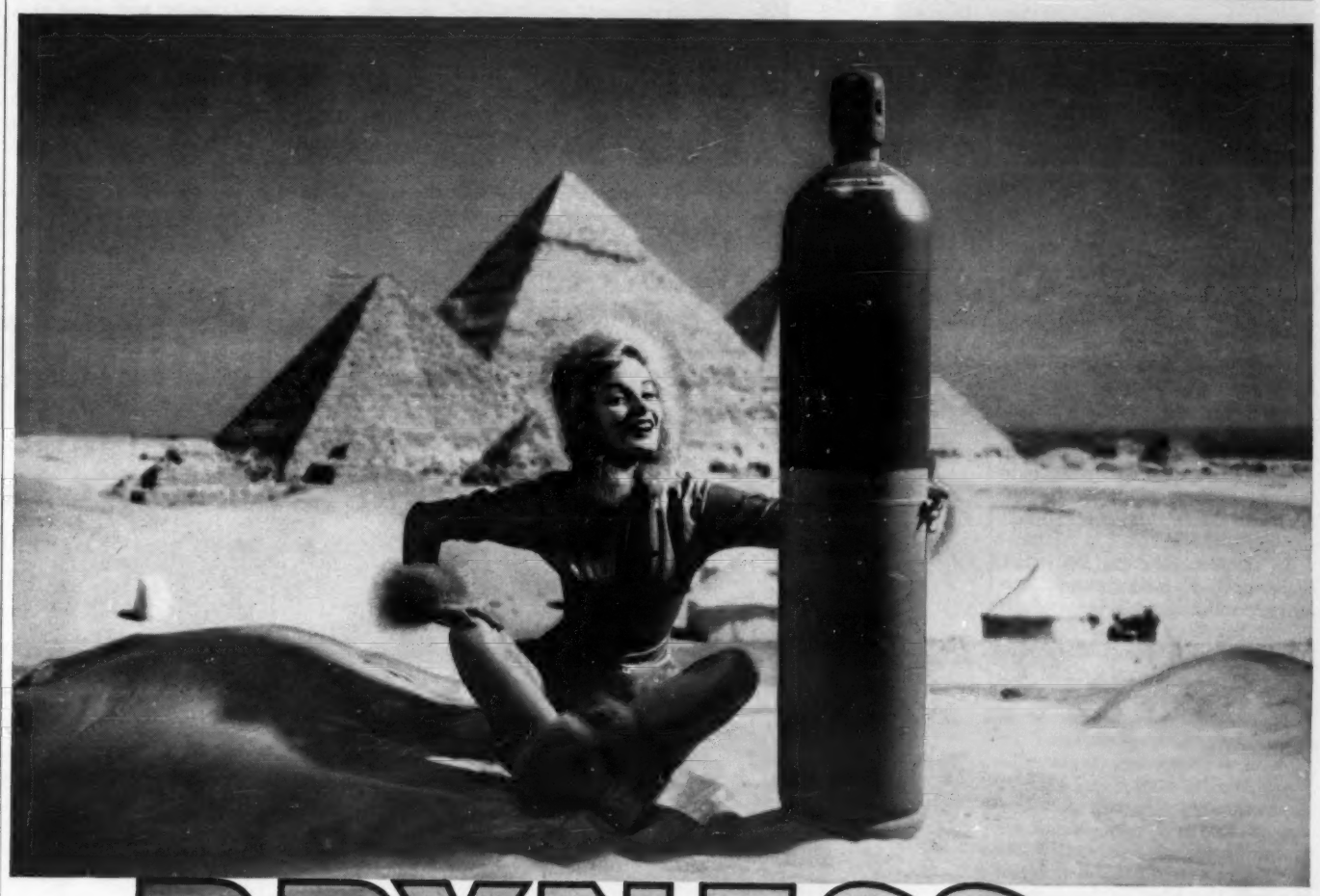
Houston plans a program which will provide discussion by those specializing in thermal, atmospheric, acoustical, luminous, aesthetic, structural, and mechanical factors for indoor comfort and efficiency in homes, office buildings, shopping centers, and airplanes.

Houston reports speakers will include Dr. Vern O. Knudsen of UCLA on acoustics, Alfred Mayo of Douglas Aircraft, Burgess H. Jennings who is a member of American Society of Heating & Air-Conditioning Engineers, Architects Richard J. Neutra and Robert E. Alexander, and Douglas H. K. Lee of Army Quartermaster Research and Engineering Command.

-75°F. Room Tests Redstone Missiles

BIRMINGHAM, Ala. — Some 175 tons of refrigeration was provided for a space 8 by 8 by 18 ft. at Redstone Arsenal, Huntsville, Ala., by Birmingham Gas Heating & Air Conditioning Co.

The space will be used for testing missiles under temperatures as low as -75° F. and at extreme humidity.



DRYNESS

best reason in the world for using

genetron®

SUPER-DRY REFRIGERANTS

"Genetron" Refrigerants are the ultimate in dryness. In "Genetron" 12, for example, there is less than one-thousandth of one percent of moisture! And the tight specifications for "Genetrons" are consistently *bettered* in production. That's why smart service engineers everywhere are insisting on Super-Dry "Genetrons."

Service? No matter where you are there's a "Genetron" wholesaler as near as your telephone. Make *your* next order—*"Genetron."*

QUICK FACTS on GENETRON Super-Dry Refrigerants

- Guaranteed exceptionally low moisture content.
- Noncorrosive to standard equipment materials, nontoxic, nonflammable, stable, safe.
- Critical and freezing points well outside range of operating uses.
- Solvent action on oil helps prevent solidification or congealing of lubricant; aids in lubrication of equipment; generally miscible with oil.
- Freely interchangeable and may be mixed in any proportions with comparable fluorinated hydrocarbons meeting the same strict refrigerant specifications.
- Available everywhere, from refrigeration wholesalers throughout the country.

GENETRON 11 ORANGE LABEL CCl_3F
Trichloromonofluoromethane

GENETRON 12 WHITE LABEL CCl_2F_2
Dichlorodifluoromethane

GENETRON 22 GREEN LABEL $CHClF_2$
Monochlorodifluoromethane

GENETRON 113 PURPLE LABEL $C_2Cl_3F_3$
Trichlorotrifluoroethane

GENETRON 114a BLUE LABEL $C_2Cl_2F_4$
Dichlorotetrafluoroethane

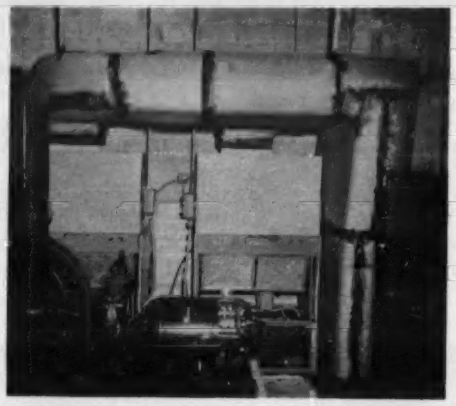
Allied Chemical

GENERAL CHEMICAL DIVISION

40 Rector Street, New York 6, New York

Heat Pump Circuits Air Condition Miami Beach Apartment House—Heat, Cool Simultaneously

MARINE TYPE heat exchanger takes up very little space in basement of Kenilworth House apartment hotel in Miami Beach. This is all the basement space required to handle the entire heating and cooling needs of the seven-story hotel.



TWO 8-TON heat pumps on top floor cool and dehumidify 100% fresh air and distribute it through vertical duct at right to corridors below.

FRESH AIR is discharged in both directions from the ceiling grille in the center of each corridor. High wall outlets carry fresh corridor air to individual heat pumps within rooms.

* * *

MIAMI BEACH, Fla.—After two years of operation, the heat pump installation at the Kenilworth House apartment hotel has been outstandingly successful from an operating and maintenance viewpoint, R. S. Lafferty, vice president of Hill-York Corp., Miami, reports.

Lafferty took members of the National Association of Practical Refrigerating Engineers on a tour of the installation during the group's annual convention at the Kenilworth hotel next door.

In the building are 106 York water-cooled heat pump circuits providing individual heating and cooling control for each room and apartment. There are also two 8-ton units on the top floor to provide conditioned air to corridors and a separate 8-ton unit for the cafeteria.

A closed sweet-water circuit feeds each of these heat pumps, exchanging the heat it picks up in a Marine type heat exchanger in the basement. Salt well water at a constant 78° F. is pumped through the heat exchanger.

Pioneer Design

The system as finally installed was a pioneer design developed through the cooperation of the architects, Roy France and Arthur Swanson; the owners, the Schott family of Cincinnati; and in particular the operating leaseholding company Kirkeby Hotel, Inc., chain through Eric Utescher, their chief engineer.

The York Corp. as the manufacturer developed the individual hermetic circuits used and the special heat exchanger.

The result desired in the orignial design was individual room or apartment suite control even including heating the north or west exposure rooms when cooling may be desired in the east or south exposed sections.

Provide for Conversion

A central type system was desired and yet a plan for a possible later conversion of the building for co-op apartments was contemplated and is indeed now a fact, Lafferty added.

The elimination of any cooling towers was considered essential by Utescher because of appearance and a top floor owner's Penthouse location, as well as for economic reasons.

Lafferty continued:

"As we have along the ocean here an unlimited supply of salt water underground at approximately 78° the year around and as the Kenilworth hotel five years previously had used this water in a York Marine system for 150 tons of air conditioning quite successfully — this water then became possible to use for not only the condensing media but also the heat source for heat pumps.

"The basic equipment selected was 28 1½-hp. York water-cooled heat pump circuits for the larger rooms and 78 1-hp. units to handle the smaller rooms.

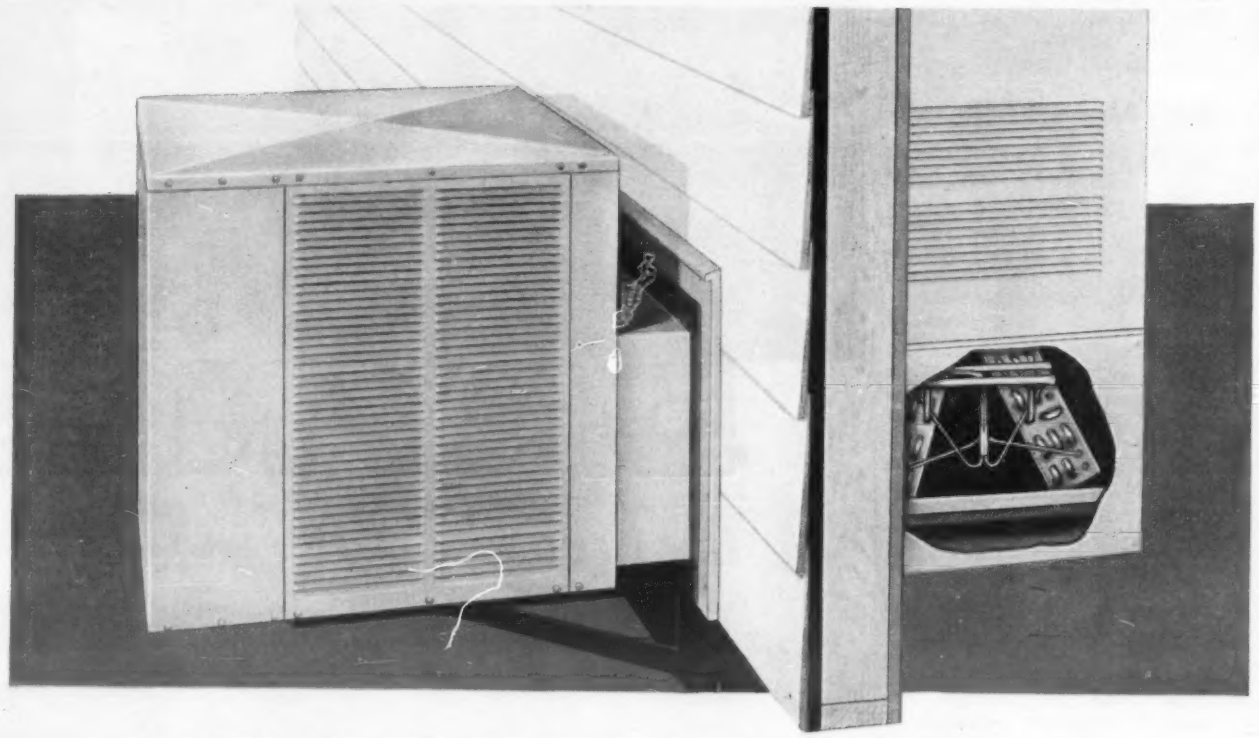
"Each of these units is particularly adapted for reverse cycle use as in their basic design they have a well balanced condenser—evaporators circuit fed through a restricter or capillary

PLAN YOUR HEATING FOR THE SALES APPEAL

new Frigidaire Trans-Wall

SLIDES IN LIKE A DRAWER!

SLASHES INSTALLATION COST UP TO 50%!



PROVIDE FOR LOW COST AIR CONDITIONING NOW...OR LATER—WITH EVERY NEW FURNACE YOU SELL!

Another Frigidaire First! Installed For a Year at NAHB Research House

Here's a completely new concept in full-home air conditioning—the Frigidaire Trans-Wall System! New "slide-in" Trans-Wall Units are now in production after a full year in an actual installation at the NAHB (Home Builders) Research House, Kensington, Md.

The Frigidaire Trans-Wall System is the simplest, most compact year-round comfort maker ever devised. Here's why! The complete *all-in-one* Trans-Wall Unit consists of an air-cooled condensing unit with twin Super Meter-Miser Compressors plus a "wall-sleeve" that slides through wall to furnace, and a high-efficiency "inverted V" cooling coil that fits into pre-installed housing to give full-home conditioning with any Frigidaire furnace.

Ready to Install—FAST!

All internal wiring is done, refrigerant lines connected, system sealed and checked by the factory. With the furnace located at an outside wall of the house and coil housing in place, all you do is slide Trans-Wall in place and wire in. Trans-Wall System utilizes furnace blower and ductwork.

Get the full profit potential story from your nearby Frigidaire District Headquarters *today!*

While Others Dream of the Future— FRIGIDAIRE

Apartment Building Heat Pump System

tube eliminating all expansion valves and their reversing problems.

Two 8-ton York heat pumps are installed on the upper floor to air condition, including heating, when necessary, 100% fresh air and feed it through a vertical duct system to all floor levels. This furnishes the proper ventilation air for all room or suite units — and keeps the building at a low dewpoint in so doing. An additional 8-ton unit serves the coffee shop.

Salt Water Pipe Undesirable

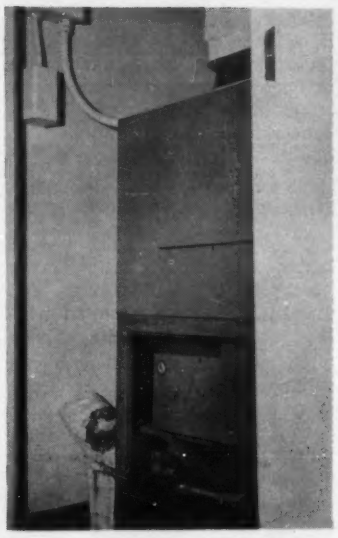
"As it was very undesirable to run salt water piping through a luxury hotel, all of the water-cooled units get their heat source or condensing water from a closed system of fresh or sweet water supply and return piping, going to a central and special Marine plate type heat exchanger in the basement.

"The salt water flows through this unit and as an average cools or heats the fresh water to within from 2° to 8° temperature of the well water. Multiple pumps circulate both salt and fresh water circuits and usually only a 5-hp. pump is required to be operating.

Corrosion Signs Practically Nil

"The heat exchanger has been inspected by both factory and local engineers periodically and corrosion signs are practically nil.

"This method or type of water to water transfer has proven highly successful. In contrast with old designs it requires much less water circulation due to its low head pressure and the large surface in its design.



HIDDEN IN centrally located closet is 1½ or 1-hp. York heat pump circuit. Electrical switch controlling unit is at top of picture.

HIGH WALL OUTLET discharges cool or warm air as needed to keep apartment comfortable. Thermostat switch can be seen in entry at left.

"The system has powerful proven heating ability not affected by outside air ambient temperatures. Boilers are used only to supply the hot water needs of the building.

The system eliminates the use of city water for cooling tower purposes and the need for providing the space and structure to support a tower. The heat exchanger used is designed for easy cleaning and it is highly efficient in providing low condensing water temperatures."

Lafferty pointed out that the heat exchanger takes up a very small amount of space, yet is so mounted that its capacity can be doubled without requiring additional floor space.

Another feature of the system is that each apartment is provided with its own electrical switch, so that the tenant is billed only for the electricity he uses.

When an apartment is unoccupied, that unit can be cut out of the system. Or, it can be run occasionally to reduce humidity in the apartment and keep furnishings dry.

OF LOW COST FRIGIDAIRE AIR CONDITIONING

full-home air conditioner

TRANS-WALL FITS EVERY TYPE FRIGIDAIRE FURNACE —OR OTHER CONVENTIONAL FORCED-AIR SYSTEM!

New—completely self-contained air-cooled package

Simplified installation

No concrete base needed

Factory-sealed

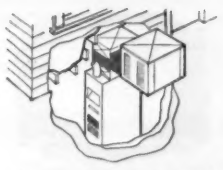
Uses furnace blower and ductwork

No plumbing for water supply

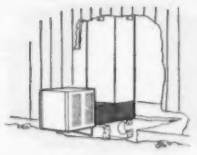
No refrigerant connections

Two sizes 24,000 and 35,000 BTU/hr.

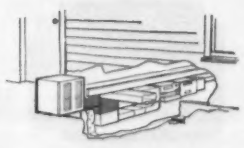
Twin compressors



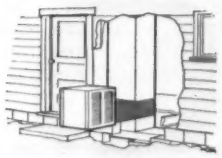
BASEMENT TRANS-WALL SYSTEM
Trans-Wall Unit slides into coil housing above Frigidaire Vertical Upflow Type Furnace. Adaptable to Lowboy Type.



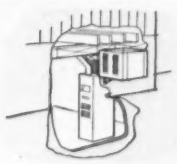
SLAB TRANS-WALL SYSTEM
Trans-Wall Unit installs under Frigidaire Vertical Downflow Type Furnace in housing.



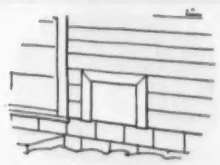
CRAWL SPACE TRANS-WALL SYSTEM
Frigidaire Horizontal Type Furnace. Trans-Wall Unit installs in crawl space with plenum added below coil housing.



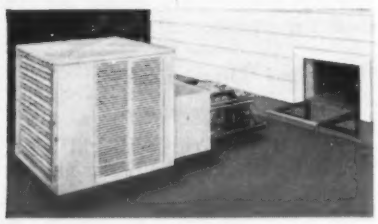
CRAWL SPACE TRANS-WALL SYSTEM
Trans-Wall Unit installs under Frigidaire Vertical Downflow Type Furnace. (Modified Slab hook-up.)



TRI-LEVEL TRANS-WALL SYSTEM
Trans-Wall Unit, bracketed above ground level, installs in coil housing above Frigidaire Vertical Upflow Type Furnace.



ROUGH-IN NOW — INSTALL LATER
Locate new furnace adjacent to outside wall, add coil housing and prepare wall opening. Slide in Trans-Wall Unit at later date.



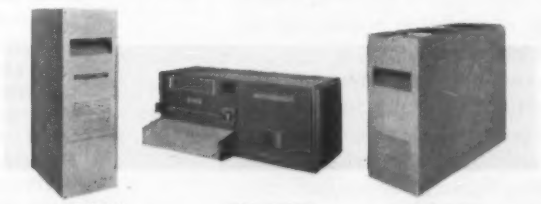
SIMPLIFIED INSTALLATION! TRANS-WALL UNIT SLIDES INTO WALL OPENING 14" x 24"

Less than 350 lbs. net weight, new AIAZ-240 Frigidaire Trans-Wall Unit is easily installed by two men using ordinary tools. Trans-Wall easily adds a full 24,000 BTU/Hr. of Dry-Cool Comfort in virtually any style home after furnace and coil housing have been installed.

1. Rough-in opening. 2. Attach outside mounting brackets (furnished). 3. Complete installation by sliding Trans-Wall Unit in place—connect control box (furnished) and wire in. 35,000 BTU/Hr. unit weighs 370 lbs. and requires slightly larger wall opening 17¾ x 24".

FRIGIDAIRE GAS OR OIL-FIRED FURNACES—
A TYPE FOR EVERY NEED, A SIZE FOR EVERY HOME

Whatever size or style home, Frigidaire has the *right* heating equipment. It's all trimly compact, attractively styled in baked-on beige enamel finish, with smooth corners and safe, cool exteriors to give extra satisfaction to your customers. Extra value, too, because Frigidaire Furnaces are designed to team up perfectly with Frigidaire Cooling Equipment.



VERTICAL HORIZONTAL LOWBOY

Choose from four types of furnaces: Vertical Upflow, Vertical Downflow, Horizontal or Lowboy. Adaptable to all sections of the country with choice of fuels including oil, or natural, artificial, mixed or L.P. gas. Capacities up to 190,000 BTU/HR for gas-fired models (A.G.A. approved) and up to 151,200 BTU/HR for oil-fired furnaces (listed with U.L.). Quiet, high-capacity centrifugal blowers. Factory-wired precision controls.

FRIGIDAIRE DIVISION,
General Motors Corporation, Dayton 1, Ohio

IS ON THE MARCH!

GM GENERAL MOTORS FRIGIDAIRE Backed by General Motors

Wisconsin Utility To Encourage Electric Resistance Heating

MADISON, Wis. — Wisconsin Power & Light Co. has adopted a policy to encourage the development and use of electric resistance space heating.

The company said that to meet the objective of this policy, it will do the following:

1. Recommend electric resistance space heating for existing homes that are built to use it efficiently.
2. Encourage customers and building contractors to build homes suitable for efficient electric resistance space heating.
3. Work with customers and contractors to see that where electric space heating is desired the home is built to use it efficiently, and provide cost of operation estimates for such houses.
4. Actively promote the use of electric resistance space heating for spring and fall heating and for summer homes.
5. Promote and advertise electric resistance space heating in selected areas.
6. Make available to customers and trades people suitable booklets and informative literature.

It is planned to have some training meetings in 1959 to provide information on selling and figuring cost of electric resistance space heating.

Eglin Air Force Base To Get 750 Home Units

EGLIN AIR FORCE BASE, Fla. — Harrelson Construction Co., Phenix City, Ala., was apparent low bidder at $317,000 to install 2-ton air conditioning units in 750 homes in an Eglin housing area, the Air Force announced recently.

SEND FOR REPRINTS

"SERVICE MAINTENANCE CONTRACTS AND AVERAGE CHARGES FOR SERVICE PARTS AND OPERATIONS."

Only 50¢ each.

For your copy, clip this ad and mail with name and address to: Air Conditioning, Heating & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

Inside Dope

By GEORGE F. TAUBENECK

(Concluded from Page 1, Col. 1)

Eventually the French franc, the German mark, the Italian lira, the Dutch guilder, etc., will disappear. They'll all use identical money.

Meanwhile banking systems, railroads, electric power grids, etc., will be integrated. Farther into the future . . . ONE big Europe, politically integrated, instead of six. Possibly even a Common Language!

Remember, these nations — particularly Germany and France — have been *warring* amongst themselves for centuries. Here is real hope for peace and progress!

For Your Reprint Copy

"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning, Heating & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

Only 25¢ each.

How It Affects Us

Contingently other European nations could be drawn within its orbit. Already the Scandinavian countries are flirting with the idea, and Britain has been skirting around it.

In time, a United States of Europe might emerge, and emerge mightily. This would be a Third Force in the world, and it would be situated between America and Communist Russia-China.

Immediately, though, the U.S.A. will be faced with export problems. You see, the "Common Market" nations will raise tariffs to the outside world while lowering them inside, amongst themselves.

Thus, it will be greatly to the advantage of American firms to invest in European subsidiaries or licensees. Already more than 1,000 have done so. With tax concessions, their numbers no doubt will increase.

Bigger Now Than Sputnik

This Common Market could become a significant turning point in world history, and eventually may be ranked with the great events of our time.

By treaty terms it isn't another futile Hanseatic League. Rather, it is a merging of the economies of advanced nations populated by more than 160,000,000 people.

Potential advantages of the European Common Market include:

(1) Duty-free access to a market comparable in population to the United States;

(2) Savings in manufacturing unit costs through increased volume of production;

(3) Greater variety of choices for consumers;

(4) More jobs for the people of these amalgamating nations;

(5) Development of new industries (which couldn't be prosperous in a single small national market).

Furthermore, there'll be a free movement of labor within the six-nation area. Italy, for instance, hopes to solve its persistent unemployment plague thusly.

However, the Common Market agreement is primarily an act of inter-nation faith, rather than a gobble of greed.

It does not pretend to guard its members against every potential risk, nor guarantee them automatic enjoyment of every potential benefit.

A continuing process of adjustment, reassessment, and readjustment will follow. As certainly as the Common Market will mean competitive advantage for some enterprises, it will mean competitive disadvantage for others.

Most important feature of the Common Market treaty, the unwritten clause which gives all the other clauses force, is that within and among the peoples of this economic union "there shall be mutual trust."

That won't happen overnight, of course. Feudal concepts of class and national antagonisms still linger and malinger. Communists trade upon these emotional vestiges for all they're worth.

Nevertheless, *an attitude of cooperation,* for the first time in the history of Europe, really is growing.

Already it has caused France and Germany, whose conflicts in the past have smashed our world, to put their economic fortunes into one another's hands with presumably mutual confidence.

Today there's a serene certainty that problems of each European country will become the sincere concern of all.

That, gentlemen, is wondrous historical PROGRESS in the affairs of humankind.

They Are Not Inexperienced

Having already worked together in the OEEC and in other specialized organizations (such as the European Payment Union) Western Europeans have discerned that their true interests aren't conflicting. Rather, they are complementary and, therefore, best served by mutual help and cooperation.

Formation of the European Coal and Steel Community was the proof. No greater pledge to a cooperative economic future could have been offered by France to her hereditary enemy, Germany, or by both to other countries of Europe.

Italy, Belgium, Holland, and Luxemburg participated happily in this pledge of economic and political fealty.

That "Coal and Steel Community" is working out well. It presages eventual political and economic integration of Western Europe through the Common Market.

Moreover, we shouldn't overlook its companion treaty, Euratom. (This organization pools atomic energy.)

While commercializing atomic energy as an industrial resource, nations of Western Europe need neither conciliate nor compensate. There are no established interests to bear in mind, no present commercial advantages or disadvantages which need be taken into account.

Therefore it may be hoped that in Euratom the member nations will be able to create a model of *political* integration without fuss or feathers.

The Military Picture

Free Europe's urge and surge toward a cooperative destiny won't be limited to economic organization, obviously. A case in point is the North Atlantic Treaty Organization.

As a military alliance, NATO is unique in that armed forces of many nations are committed to an international command (U.S.A.) in peacetime.

NATO also is unique in that political influences at work within it aren't centrifugal. They're centripetal. Its members seek constantly to make the alliance closer, stronger, more effective.

Principle involved is international application of economic means to the solution of political problems. And this is revolutionary, for Europe. It means, eventually, a united BIG Europe.

What lunatic Hitler really sought nobody ever will know, but his rallying cry was *Lebensraum.*

The war lords of Japan cozened her citizens and her victims with visions of a Greater East Asia Co-Prosperity Sphere.

Currently Communists buddy up to Asiatics by offering them bicycles and a Vision of the Future.

Yet, in all history, only the free-enterprise West has proved to workers that freedom for commerce and individuals means a far happier life than controlled Socialism.

N.B.: The "Common Market" and "Euratom" are based on Free Enterprise.

Mankind Does Learn From Experience

Henry IV of France sought a remedy for national financial woes in marriage with a rich Italian princess, Marie de Medici.

Wars, inflation, and royal marriages—these have been the traditional instruments of national policy in European affairs. Royal marriages no longer figure, however. Neither does military conquest.

With the advent of nuclear weapons unlimited war has become so plainly suicidal that even the Kremlin seems to be sincere in professing its desire to avoid it.

Wars, intrigue, and inflation spell the doom of the Common Man. As instruments of national policy, therefore, they are obsolete.

Economic cooperation is the answer today. World Trade spells World Peace.

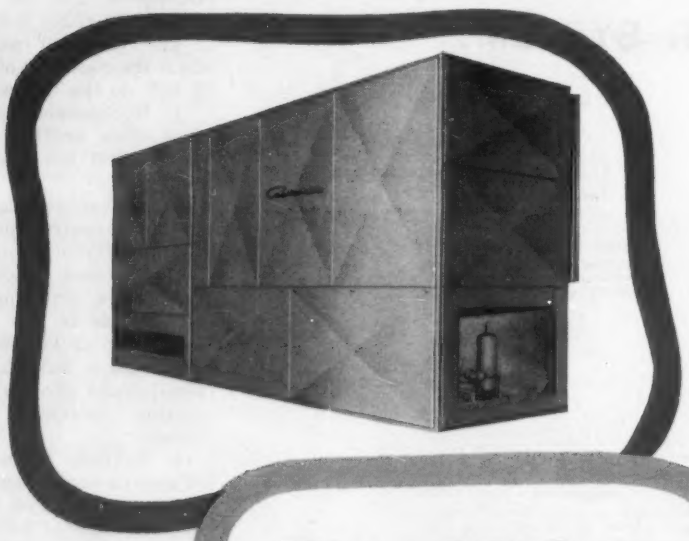
Citizens of the U.S.A.: our foreign and domestic policies need reviewing in the light of this enlightened proposition.

For Unmatched Flexibility

National-U.S.

Central Station

Packaged Air Conditioning



7½-60 h.p.

water-cooled
or
evaporative condenser

Water-cooled or evaporative condenser models in nine sizes from 7½ to 60 h.p. provide a selection from which a combination can be arranged to fit any particular situation. Each model is available in different arrangements, matched to meet any space requirements.

All units are completely engineered and packaged—require only power, ductwork and water supply connections for quick installation. And, all are factory pre-tested to minimize performance testing time.

Write today for Form AC-1001 describing the new Capitolaire Central Station *Packaged* Air Conditioning System, or contact your nearest National-U.S. representative. He'll be glad to help you.

National-U.S. Radiator
CORPORATION
HEATING AND AIR CONDITIONING DIVISION
Johnstown, Pennsylvania
In Canada: 77 York Street, Toronto
58-21
Sixty years in thermal hydronics

Thermoelectric Domestic Refrigerator

Westinghouse Prototype and Its Operating Principles Described

FIRST FULL SIZE, practical, and publicly demonstrated refrigerator operating on the thermoelectric principle is shown by Westinghouse as a prototype of tomorrow's refrigerators.

KEEPING FOODS fresh and protecting furs against moisture damage are just two applications of this new portable dehumidifier that has no moving parts. The prototype of such appliances that will be commonplace in the homes of tomorrow, the product uses the thermoelectric principle that produces cold direct from electricity with no compressor as is used now. In size, it is just a little larger than a compressor alone in standard dehumidifiers. Its designers envision its use in keeping crackers, potato chips, and similar items crisp in the cupboard and drying clothes closets in humid climates.

DESIGNED to divide kitchen work section from the dining area, a new idea in refrigerators that are accessible from two sides has been introduced by Westinghouse. Styled as fine furniture, the unit contains such innovations for refrigerator appliances as its own counter-height work surface, refrigerator and freezer drawers, electric outlets for portable appliances, French doors and sliding doors, and "super insulation."

CHICAGO — First full-size, practical thermoelectric domestic refrigerator is being demonstrated by Westinghouse Electric Corp. at the Merchandise Mart here during the Home Furnishings Show beginning Jan. 5.

Along with the prototype of a thermoelectric refrigerator, Westinghouse will display prototypes of a small, thermoelectric dehumidifier, a furniture styled refrigerator made up of sections and cooled from a central source, and an ultrasonic dishwasher.

Westinghouse pointed out that none of these products are yet ready to market.

The thermoelectric refrigerator draws its cold directly from electricity with no mechanical or motor activity.

The thermoelectric refrigerator rests on sculptured, chrome-plated legs. Cabinet is 15 in. above the floor. Its meat, vegetable, and freezer drawers form the base of the 9-cu. ft. unit. They are covered with a laminated plastic shelf on which rests the balance of the cabinet, accessible through French doors. Shelf is a usable work surface.

The cold generated by the thermoelectric elements is in direct contact with the freezer section and channeled with appropriate controls into the fresh meat compartment.

The fresh food section is cooled by a cold injection system that admits cold through an opening at the base of the cabinet. By means of a fan at the top, cold is literally pulled through the compartment. This system also pulls the cold around the fruit and vegetable crisper.

Magnetic gaskets hold the French doors firmly in place when closed. Within the upper cabinet, there are two pan-type shelves that swing out for better accessibility. Beneath them is a tall bottle storage section.

On the left are three pull-out perforated shelves. These three shelves are of 14, 12, and 10-in. depth, respectively, conforming to the taper of the cabinet.

The refrigerator is the first thermoelectric application by Westinghouse to a conventional product. Last summer Westinghouse introduced a mobile hostess cart that contained both a warming oven and refrigerated section and a device that both cools and heats a baby's bottle.

The portable thermoelectric dehumidifier is for use in cabinets, cupboards, and closets. It is smaller than the compressor alone required in standard dehumidifiers.

Electric current passed through two dis-similar materials creates cold which condenses moisture from the air while a fan dissipates the heat removed from the materials by the electric current.

The furniture styled refrigerator is designed to double as a room divider and opens in two directions. It is claimed to be the first to employ a central cooling system that is actually a separate element.

Cold is channeled from this concealed system through ductwork into the cabinets.

These coils of Viking thin-wall copper tube may differ in length and dimension . . . but they are identical in that they have all been *tailored to customer requirements!*

Viking today employs the most advanced drawing and handling equipment known to the industry to deliver continuous coils of precision drawn thin-wall copper tube . . . in any desired length up to 2000 feet . . . in a wide variety of coil designs to meet individual specifications: reel-type, helical, layer or bunch.

By developing new coil techniques, originally for the instrumentation field, Viking has won the preference of more and more of America's leading manufacturers of refrigeration and air conditioning units and coils.

VIKING

COPPER TUBE CO.

CLEVELAND 10, OHIO

PRECISION DRAWN SEAMLESS COPPER TUBE

They'll Do It Every Time

by

Jimmy Hatlo

HELLO, SHOEHORN-YEAH-LOOK--I TOLD THE BOSS I HAD TO GET OFF EARLY ON ACCOUNTA THE STORM--CAN YOU GET OFF? DIMBULB'LL PICK US UP IN THE CAR IN FRONT OF THE DUTCHMAN'S--TELL YOUR BOSS YOU GOTTA GO ON ACCOUNTA OUR CAR POOL....
HIM AND HIS CAR POOL--HE'S ALWAYS ON THE PHONE WITH THE OTHER HITCHHICKERS....
STORM? THE GUY IS WASHING THE WINDOWS UPSTAIRS--I'VE SEEN HIM SIT THRU A BALL GAME IN WORSE DEW THAN THIS...
OH, HELLO, FUTELESS--OKAY--I'LL ASK HIM--THEN I'LL CALL HARTBURN--WE OWE HIM A RIDE, TOO...
SOMETHING TELLS ME THEY'LL DO A LITTLE POOLING AT THE DUTCHMAN'S AN' LOOP HOME ABOUT 9:30...
THAT CAR POOL IS A GREAT EXCUSE FOR GETTING IN LATE TOO--THEY RUN OUT OF GAS SO OFTEN THEY OUGHTA USE NOVOCAIN...
LISTENING TO THE OFFICE ARAB GETTING READY TO FOLD HIS TENT EARLY....
THANX AND A HATLO HAT TIP TO BOB RICHMOND, 73 E. WHEELOCK ST., HANOVER, N.H.
12-23
JIMMY HATLO
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Pessimistic NEMA Economist Probably Wrong; But We Should Heed His Warning

ELECTRICAL manufacturers, many of whom still are reeling from the recession, received a warning of even worse times ahead from an economist who talked to the annual convention of the National Electrical Manufacturers Association.

The economist, A. C. Farmer, of Sharon, Pennsylvania, told his listeners that "business will be sustained at a high rate of activity for another four years."

"After that, the huge accumulation of public and private debt will bring about economic instability and economic disaster."

In support of this contention, Mr. Farmer declared that net private debt has expanded from $140,000,000,000 in 1945 to $455,000,000,000 in 1957—an increase of more than $300,000,000,000 in 12 years. He predicted that the amount of private debt will reach $800,000,000,000 by 1962.

That financial storm which this particular economist forecasts will start in 1962-63, he claims, and make the recent recession "seem like a mild breeze."

Our nation's attempt to "spend itself into continuous prosperity by the use of an unlimited amount of borrowed money will be its undoing."

Inflation, he insists, is the result of borrowed money. Both political parties, as well as some business practices at the consumer level, Mr. Farmer declared, must share the blame for the depression which he feels is inevitable.

Politicians of both parties, rightfully observed Mr. Farmer, "irrevocably are committed to support governmental programs that require billions in borrowed money—public and private."

In addition, he continued, "the time payment procedure, so generally employed in the purchase of consumer durable goods, keeps millions of individuals perpetually in debt."

Mr. Farmer completed his gloomy picture of the future in these words:

"Because both political parties have come to believe that huge governmental spending programs are essential to gain the support of the electorate, no restraining action can be expected from Congress."

Also, under these conditions, he predicted, action by the Federal Reserve Bank to checkmate inflation will prove to be ineffective.

Under questioning, Nema's business and economic consultant admitted that his predictions could come a-cropper if there were a revolutionary swing to conservatism in both public and political thinking.

He added, however, that "in view of the increasing popularity of what is called the 'Liberal Group,' the possibility of such a swing would seem to be the product only of wishful thinking."

The guy probably is wrong in his forecast of a 1962-3 economic doomsday. So many factors other than borrowed money—both private and public—enter into the economic picture that there's good reason to doubt his occult invincibility.

Four years from now (1962-63) the avalanche of "war babies" will be getting married, setting up homes, and having more babies at a rate greater than at any time in America's previous history. They'll provide tremendous markets.

Moreover, exciting new consumer products (now on the drawing boards) will be available then. Altogether there will be many counteracting and countervailing influences.

Nevertheless, there's an uneasy gnawing at the mind in this corner that Mr. Farmer is uttering a warning which should be heeded.

We seem to have forgotten a few aphorisms which guided our forefathers. Such as "waste not, want not." And:

"Use it up; wear it out;

"Make it do, or do without."

And never underestimate our forefathers. They made the U.S.A. the most successful and prosperous nation in all world history.

We, their inheritors, would do well to emulate them.

If you must reach a man in business at his office, try not to advertise to him as a businessman, but simply as a man—a various, unpredictable, warmhearted, stubborn-headed, intelligent, fickle but well-intentioned human being. Try to give him a breather from this world of facts while, of course, slipping in the commercial as deftly as you can.—NICHOLAS SAMSTAG, director of promotion, *Time, Inc.*

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AIR CONDITIONING HEATING & REFRIGERATION NEWS

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F. M. COCKRELL, *Founder*

'The Conscience of the Industry'

Published Every Monday by BUSINESS NEWS PUBLISHING CO., 450 W. Fort St., Detroit 26, Mich. Telephone Woodward 2-0924. Subscription Rates: U. S. and Possessions and Canada: $6.00 per year; 2 years, $9.00; 3 years, $12.00. All other countries: $10 per year. Single copy price, 40 cents. Ten or more copies, 30 cents; 50 or more copies, 20 cents each. Send remittance with order.

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Member, Audit Bureau of Circulations. Member, Associated Business Publications.

VOLUME 86, NO. 2, SERIAL NO. 1,555, JANUARY 12, 1959

OFF THE CHEST

QUESTIONS SIMPLICITY OF MULTIPLE UNITS

Minneapolis-Honeywell Regulator Co.
Minneapolis 8, Minn.

Editor:

Many of us here at Honeywell read your "NEWS" publication weekly and enjoy it considerably.

As you may recall, the article on page 8 of the October 27th edition was entitled "3 Systems Air Condition $300,000 Mansion to Avoid Complicated Zone Control Set-up." Although we agree that a home this size may warrant multiple units versus Zone Controls, our experience has proved that Zone Control in the majority of installations is less costly and less complicated to install.

Our 1959 Advertising and Merchandising campaign will include the promotion of multiple heating and air conditioning units but it will also promote Zone Controls. As a result we are convinced that the industry will "weigh out" the ease and cost of installation to determine which method is the more practical.

H. O. CHAMBERLAIN,
Market Manager

READER SEEKS OUT-OF-PRINT BOOK

Shaker Heights, Ohio

Editor:

Within the last six months you quoted at some length from "Entirely Business" by H. S. Spencer in your column. I have been unable to locate this book locally and would appreciate your advice as to where a copy may be procured.

I don't write letters to the editor or you would have heard from me long ago. Your editorial comments and columns could well grace the pages of our largest metropolitan daily. I was particularly gratified by the series on your travels.

HARLAN E. GIVELBER

Editor's Note: "Entirely Business" is out of print. However, it may be found in many public libraries.

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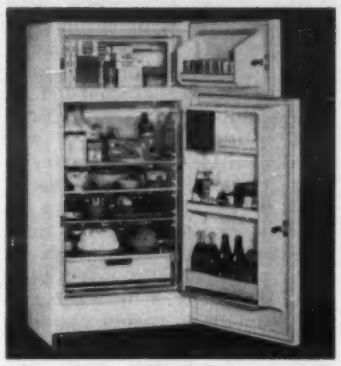
Admiral 'Ruler' Room Units Designed To Eliminate Inside, Outside Overhang

CHICAGO — A new "Ruler" series of room air conditioners —1 ft. deep and 13⅝ in. high— has been added to the Admiral Corp. line of air conditioners for 1959.

Along with its 15-model air conditioner line, Admiral offers a 15-model refrigerator line and 11 home freezers.

All seven of the Ruler series air conditioners have the same size cabinet and 1-hp. compressors. They differ only in voltage and ampere ratings and in that two models are reverse cycle.

They are designed, the company said, to eliminate overhang both inside and outside a window, to install easily, and to sell at a lower price. No outside supports are necessary.



ONLY 28 in. wide, this 12-cu. ft. Dual-Temp refrigerator-freezer by Admiral Corp. is a two-door model with frozen food storage at the top.

Other features include accessible front controls, two-position weather control dial, front air return, washable dynel air filter, and efficient mixed flow impeller.

Five models in the "Coronet" series and three models of the "Regency" series are being continued into 1959. They range from 1 to 2 hp. in size.

Eight "Dual-Temp refrigerator-freezer combinations, evenly divided between top and bottom freezer styles are being offered. All feature Admiral's exclusive automatic climate control, two doors without center post, automatic defrosting and draining, compressor muffler, adjustable aluminum shelves, and blue and white interior.

Three of the Dual-Temps are flush-fitting and only 28 in. wide. They are designed specifically for the replacement market. All but one Dual-Temp has the "Magic Ray" air freshener.

In addition to the Dual-Temps, which range from 11.6 to 15.8-cu. ft. capacity, Admiral offers seven other refrigerators. Three are 8.6-cu. ft. capacity, three 10.8 cu. ft. (one with automatic defrost), and one 12.6 cu. ft.

Admiral's 11 freezer models range from 9 to 20 cu. ft. Six are uprights and five are chests. A 9-cu. ft. upright measures only 24 in. wide and 56 in. high. The 15 and 17-cu. ft. uprights are styled for flush fitting. All uprights have circulating cold air design.

Top of the line features include pop-out dispenser racks, adjustable shelves, ice cream keeper, and special lighting to aid reading package labels.

Rochester Tubing Reports Record 3 Mos.

ROCHESTER, N. Y. — A record three-month period for the sale of GM steel tubing to the refrigeration industry was reported by the Rochester Products Div. of General Motors.

The period covers September, October, and November and exceeds by 9% the previous three-month high of March, April, and May, 1955, according to Russell F. Sanders, director of sales and engineering.

September and November of last year also ranked as the number one and two refrigeration tubing sales months in the division's history, surpassing the previous high month of May, 1955.

After Feb. 1

Room Unit Mfrs. Can't Exclude Co-op Ad Funds When Figuring Tax

WASHINGTON, D. C.—After Feb. 1, manufacturers of room air conditioners and other items subject to manufacturers' excise tax, no longer will be permitted to exclude co-op advertising allowances from the selling price on which they compute their tax, the Internal Revenue Service has ruled.

Up to now, manufacturers have been able to consider co-op allowances as price adjustments and deduct them from the selling price before computing the excise tax.

Actually, IRS announced its change in policy last spring but deferred the effective date after industry protests. The latest announcement has also brought protests from the Federal Excise Tax Council and a call for legislative action to counteract it.

IRS has also admitted that partnerships get an extra break under the recently adopted additional depreciation allowance on tangible personal property for the first taxable year.

This additional allowance is 20% of the cost of the property and regular depreciation is allowable on the balance of the cost after deducting the new allowance.

This applies only to tangible personal property purchased after Dec. 31, 1957 for use in a trade or business or for the production of income. It does not apply to real property or tangible personal property with a useful life of less than six years.

Because only individuals are taxed in a partnership and not the partnership as such, each individual is entitled to the additional allowance—in proportion to his interest in the business.

Carrier Div. Wins 'Excellence Award'

SYRACUSE, N. Y. — The Unitary Equipment Div. of Carrier Corp. has received an "Excellence Award" from the Artists Guild of Chicago for the quality of sound-slide films used in sales promotion.

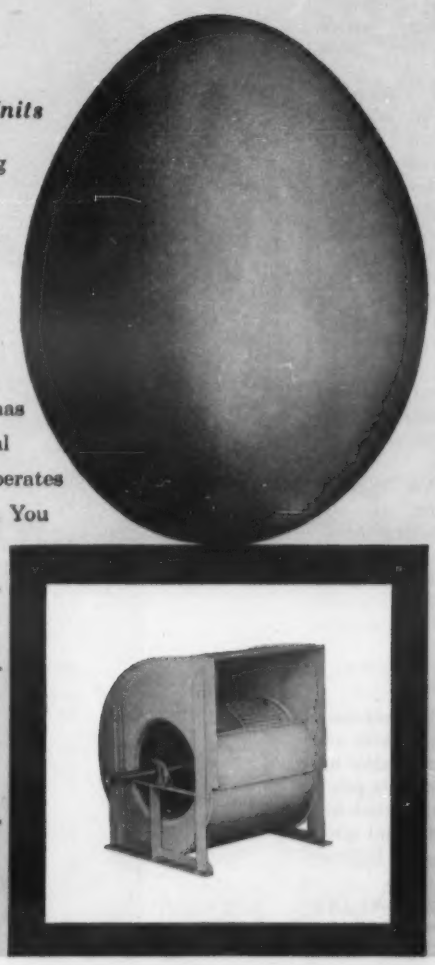
Kenneth Vaughn, director of sales training, said the citation was given jointly to Carrier and Dallas Jones Productions.

BY FARBER DESIGN

**AM-pak . . . Perfect Package for Air Moving Units*

For evaporative condensers, air handling units and heavier heating equipment, Utility has created AM-pak, an entirely new design priced for high production, combining efficiency with flexibility, strength with perfect dynamic balance. Ranging in diameters from 10 to 36 inches, the rugged blower wheel has 64 specially curved blades, features a conical center disc construction and operates at static pressures up to 6¼" W.G. You deliver greater air-power with less horse-power when your equipment is built with AM-pak.

Scroll shapes and wheel diameters can be matched to your exact needs. Let us send you complete data.



UTILITY FAN CORPORATION

911 East 59th Street, Los Angeles 1. International Division, 141 El Camino Drive, Beverly Hills, California. A division of Utility Appliance Corp.

*Air Moving Package.

Improving Air Conditioning--

(Concluded from page 1)

grading of installers through training in installation technique is an all-important need."

Stating that he had no intention of "getting into a discussion of the over-all merits of the 5-year warranty," Wyckoff nevertheless had this to say about the effect of the warranty, from the standpoint of an engineer for a manufacturer:

"In 1952 the 5-year warranty was introduced. This industry-wide warranty was intended to cover the cost of changing faulty air conditioner components—especially the compressor. It protected the customer against unfair expenses due to errors of installation or manufacture of the product, and increased acceptance of air conditioning.

"It also made possible the obtaining of exact information from the field on product improvements which would make air conditioning units more and more rugged to fulfill the designer's dream of good performance—even in the poorest installations.

"There are now six years of records of the performance of units covered by the 5-year warranty; much information has been obtained by special field investigations. The results are appearing in many of our products and the level of performance and reliability is increasing to match the product achievements of the engineers in cost reduction and improved features."

Brutal Compressor Tests

The compressor designer's "objective for the future" as Wyckoff sees it should be to produce a unit which will operate indefinitely under practically all field conditions. In order to do this, engineers are subjecting compressors to "brutal" tests under conditions which might seem outlandish, such as—

Fast cycle tests. 7½ seconds on, 7½ seconds off, at 148° F. condensing temperature, 44° F. saturated suction temperature; 200,000 cycles. Floodback tests. 3 minutes on, 3 minutes off, 500 hours, 110° F. condensing, 46° F. suction temperature, continuous flooding with cold crankcase and refrigerant slugging on start. Also head load cycling (4 minutes on, 1 minute off, 148° condensing, 12,000 cycles) and high load continuous running and high ratio continuous running at 154° F. condensing temperature.

(In the discussion period later, representatives of the General Electric, Westinghouse, and Worthington air conditioning departments reported similar stepping-up of test requirements for air conditioning equipment.)

Field Problems

Among the field problems which affect air conditioners adversely (arising from faulty installation and maintenance practices) Wyckoff concentrated his attention on four principal ones which develop from the following factors:

(1) Inadequate air flow; (2) flooding of refrigerant and no control of superheat; (3) operation of the unit in cold weather; (4) problems with motors, controls, and electrical wiring of all kinds.

Principal Causes of Inadequate Air Flow

He listed the following practices as the principal causes of inadequate air flow:

Plugged air filters—caused by faulty maintenance.

Return or delivered air ducts which are too small—citing one example of a 2-sq. ft. opening return air duct for a 25-ton cooling installation.

Faulty installation practices, such as mounting a condenser against a wall, or placing blowers so that they work against one another.

Flaws in design or installations, such as one for a motel where the duct design was good, but control of individual rooms required opening or closing manual dampers at the room registers. On occasion this system would operate with all registers completely closed, but with the 10-hp. unit still running.

Such conditions have one principal effect, a reduction of compressor suction pressure and either freezing of the coil or tripping of the low pressure cutout.

"With installers on a new job under financial and other pressure to get the equipment running and accepted," said Wyckoff, "there is a strong temptation when facing an installation with inadequate ductwork to reset or wire around the annoying low pressure cutout or to open the expansion valve until it floods continuously. This last-named operation raises the suction pressure — permitting the unit to run but washing the compressor bearings continuously with refrigerant."

In cold weather operation of air conditioners, when outside temperatures drop below 55° F., extremely low compressor head pressures result in insufficient pressure across the expansion valve. In operation in mild weather between 50° and 70° F., if the unit is equipped with a low pressure cutout, it will usually trip out shortly after it is started. The suction pressure does not rise fast enough to prevent the safety device from operating and even if it is of the automatically recycling type, the pressure will not rise high enough to permit the unit to start again. Such tripouts encourage tampering with the unit, said Wyckoff.

In air-cooled systems where the condensing unit is located outside the conditioned space, the compressor at times may be the coldest part of the system, and will attract liquid refrigerant. This problem can be overcome by compressor heating.

Dips in power line voltages can bring the operating point less than 10% below rated voltage for which most units are designed, and attempts to meet this problem by raising line voltage mean that when the load is down, the voltage may be excessively high, Wyckoff pointed out. Also, in some systems one leg of a 3-phase supply may go out because of some power failure.

These conditions require accurate and fast responding motor protection, because such power supply problems have a bad effect on motor life. Fast acting overload protection is especially important in 3,500 r.p.m. compressors because rotor temperatures, not stator temperatures, are usually most important during a locked condition, it was pointed out.

Cites Some Recent Developments

Declaring that most of the field problems can just about be eliminated if compressor and system design are coordinated, Wyckoff pointed to some of the recent developments:

Fast response expansion valves, non-adjustable in the field.

Crankcase heaters in all compressors.

Heat pressure control throughout the entire range of temperature conditions on both air-cooled and water-cooled units.

Controls to delay the action of the low pressure cutout for 3 to 5 minutes after starting.

Improved motor insulation and protection.

The new small bulb fast response type expansion valve can bring superheat of the refrigerant gas entering the compressor above 10° within 10 seconds after a cold start, and if an air conditioner cycles six times per hour, the new type saves 11 minutes of flooding operation per hour, the speaker stated.

He said that experience had indicated that it is best to make these new valves sealed and not adjustable so that the setting cannot be changed in the field, but that this can be practical only if the rest of the system is designed to make such tampering unnecessary and if quality is rigidly maintained.

Consideration of capillary tube systems is another possible solution to this problem, but Wyckoff listed the following factors which work against the use of a capillary system:

Sealed air-cooled packages with capillaries have not proved generally economical in sizes 7½ hp. and above. Also, many buildings require that the condensing unit part of the system be mounted on a roof remote from the air handling units.

Refrigerant charging after installation is a delicate operation, and many engineers feel that performance compromises required by the capillary are not acceptable in numerous commercial applications.

Capillary units are subject to flooding under light load conditions.

Compressor crankcase heaters which are capable of raising the oil temperature at least 30° F. above ambient air temperatures are adequate to handle the problem in present applications, Wyckoff said. These crankcase heaters can be held across the line at all times rather than switching them off and on with the compressor.

Elimination of Foaming Oil

Combination of a crankcase heater, plus a fast response expansion valve, can practically eliminate foaming of oil on starting up of the compressor, said Wyckoff, oil pressure being obtained almost immediately.

Also recommended is a head pressure control which may operate when the outside ambient drops below 55° F. Wyckoff illustrated one type in which a squirrel cage blower on a condensing unit assembly has a discharge damper operated by a refrigerant bellows motor operating off the head pressure. This control is designed to maintain a condensing temperature above 90° F. even when the outside temperature is down to 0° F.

However, this alone is not enough, a time delay (4 minutes) on the low pressure cutout being necessary to keep the unit on the line, Wyckoff said, explaining that when the condenser surfaces and the rest of the unit are relatively cold, the suction pressure pulls down quite rapidly and trips out the low pressure cutout before the various masses in the system have time to come up to temperature.

Concerning motor protectors, Wyckoff declared that it is important that they be able to disconnect the motor from the line quickly should it become locked or unable to turn because of a defect in the power supply.

A modern magnetic overload, current sensitive only, under a locked rotor condition will disconnect the motor from the line in less than six seconds, said Wyckoff, and he declared that this represents an improvement over the older type of slow response thermal overloads.

Since most present compressor motors are cooled by suction gas, running current protection is not as important to motor life as locked rotor protection, the speaker said, stating that the proper protection for the motor during running conditions, if it is suction gas cooled, is a low pressure cutout which will take the compressor off the line if the refrigerant charge needed to cool the motor leaks out.

Motor Protectors Should Not Be 'Wired Around'

Commenting on the activity in the development of internal motor protection which can be built into the motor by the original manufacturer, Wyckoff said that it is important to design such a device so that it can't be "wired around" in the field.

The type of protector which the air conditioning industry needs, he said, is one in which an integral motor protector buried in the motor windings can disconnect motor current directly. This would make the protection of the motor independent of any external circuit and make it possible for the motor manufacturer to control motor reliability completely.

Agreeing that "quick-trip" motor load protection is a much needed development, J. A. Ditzler of the Westinghouse Air Conditioning Div. said that a vital part of this effort centers around finding a material (probably a semi-conductor) which will measure temperatures in the windings.

He described some experimentation with a thermistor which can be mounted directly on the motor windings, and which would operate a simple relay as the tripping device.

Factory engineers must realize that the things which cause trouble in the field are often the result of a failure to test under the kind of conditions which may cause such troubles in the field, said C. A. Dubberly of the General Electric Air Conditioning Div. He advocated "real tough" factory testing, in the order of:

Design for, and test for head pressures as high as 2,000 lbs.

Running tests at 800 to 1,000 lbs. discharge pressures over a considerable period of time.

Fast cycling tests on a 10-cycle per minute basis.

"It comes down to this," said Dubberly, "we've got to test at head pressures and suction pressures lower than those ever encountered in the field, and with ridiculous superheats."

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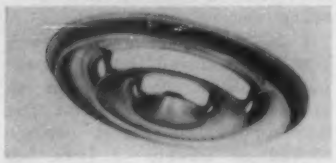
Plastic Diffuser Said To Be Virtually Indestructible



● Utilizing "the latest development in non-corrosive, flame-retardant, rigid high-density polyethylene," AirGUIDE Plastics Corp., Dept. AH&RN, 7929 N.E. First Ave., Miami, Fla. has introduced to the air conditioning and heating field a molded one-piece plastic diffuser line.

Claimed to be available "at a fraction of the cost of most metal diffusers," the line is currently being produced in sizes to fit standard ducts and dampers, or for direct-to-ceiling installation.

It is virtually indestructible, and will not support combustion.

Other features include "the unique, molded-in 'Air-Loc' triple seal which provides an air-tight closure at the duct opening without gaskets," the company said.

Schrack Announces New Current Limiters

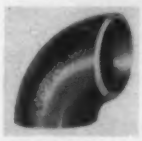
● Schrack Electrical Sales Corp., Dept. AH&RN, 1100 Madison Ave., New York City 28, announced that its parent company has developed current limiters for three-phase motors of the following ratings: 5 hp.—15 amps.; 7½ hp.—22 amps.; 20 hp.—52 amps.; and 25 hp.—60 amps.

This device is claimed to offer "a very substantial advantage and improvement over the original current limited for single-phase motors in that instead of a mercury switch, it has a motor starter equipped with a pneumatic timer.

"This change results in a reduction of the reset time."

Nibco Offers Line Of Welding Fittings

● Introduction of a new line of welding fittings with the trade name of "Husky" has been announced by Nibco, Inc., Dept. AHRN, 500 Simpson St., Elkhart, Ind.



The fittings are designed for normal (150 lb.) installations. The line includes: straight and reducing tees, 45 and 90° elbows, and concentric reducers, 2 through 6 in.

"Cold forming processes provide these fittings with smooth surfaces, which match perfectly with the pipe they connect," according to the company. "Another important advantage of these fittings is that their roughing in dimensions (center to end measurements) are the same as the nominal size of the fitting (up to, and including, 4 in.) e.g., a 3-in. tee has a 3-in. center to end dimension."

WESTINGHOUSE'S new line of portable air coolers, called "Poweraire," is represented here by the top-of-the-line model PC-3. There are three models in the firm's first line of portable air coolers.

Barber-Colman Adds Transistor Operator

● A new electronic transistorized motor operator for individual proportional applications, designed for damper and valve control in heating, ventilating, and air conditioning systems, has been added to its motor operator line by Barber-Colman Co., Dept. AH&RN, 1300 Rock St., Rockford, Ill.

Transistor operators' "compact design, moderate cost, and ease of installation, together with excellent performance, make this new kind of control particularly suited to induction units, reheat coils, multizone dampers, and double duct mixing boxes," according to the manufacturer.

"Barber-Colman transistor operators are naturally adaptable to year-round control of unitary air conditioners or induction units supplied with hot or chilled water from a central source.

"Conversion from direct to reverse acting is made by a simple switching operation that may be done manually with a hand switch or automatically by a thermostat sensing change in central system supply water temperature. Other applications requiring automatic changeover may utilize an outdoor thermostat."

Quietest Direct Drive Blower Motor

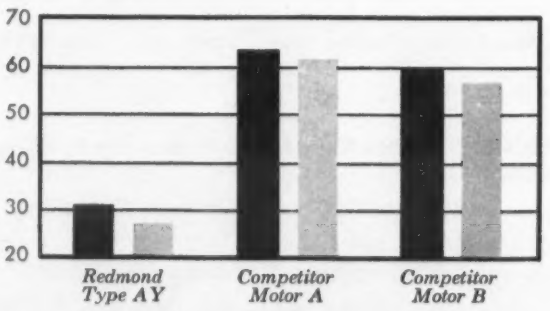
Place a mechanic's stethoscope on the end cap and you can easily hear the difference between the newly-designed Redmond Type AY and motors of conventional design. Try it on a Redmond 1/6 hp—the noise level is about that of a 1/35 hp motor of conventional design.

New Redmond Design Reduces Blower Vibration to One-Fifth that of units using Conventional Shaded-Pole Motors

Apply vibration tests and you will be quick to agree that here is the quietest direct-drive blower motor available. The AY Tri-Flux motor is designed and manufactured in every way to give years of trouble-free service and whisper-quiet operation. The positive oil system provides force-feed lubrication. Recirculating the oil assures maximum bearing life.

The graph shows vibration test results on the new Redmond design and two competitive motors. These tests were made with the best vibration testing equipment available. The solid black bar shows vibration on the motor end cap; the gray bar shows vibration on the blower housing. The graph is decibel readings on 120 cycles, since the 120 cycle frequency is the one that is the basic source of nearly all noise problems. Reduction of vibration is a logarithmic function—the reduction of vibration in the Redmond motor to 33 decibels reduces noise to only 1/5th that of conventional motors.

The new AY is ideal for a wide variety of applications requiring a whisper-quiet, economical, high-quality motor. Contact us at Owosso, Michigan, and we will have the Redmond sales engineer in your district call you at once.



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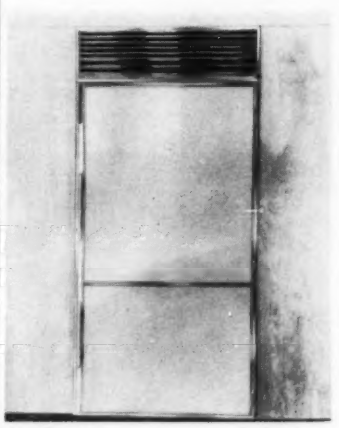


Sub-Zero Bows 1959 Built-In Line

● The 1959 line of Sub-Zero built-in refrigeration equipment consists of 10 models for use in large, medium, and small kitchens, according to Sub-Zero Freezer Co., Dept. AH&RN, P. O. Box 2017, Madison, Wis.

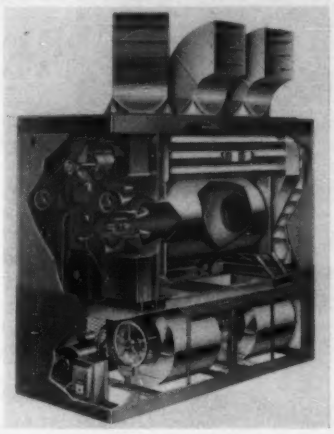
The company said many new features have been built into the line.

"Exteriors have been streamlined, new and more practical models have been added, interiors have been 'glamorized,' capacities have been increased without increasing outside cabinet dimensions, refrigerator defrosting is entirely automatic, all models are completely self venting, no special kitchen cabinets are needed to 'house' most models, and no special refrigeration 'hook up' is required to make the installation," it was stated.

Front panels are easily removed and replaced with other materials, such as wood, plastics, steel, etc., the company noted.

Refrigerator capacities range from 9.5 to 16.9 cu. ft. and freezer capacities from 7.2 to 14 cu. ft., according to the firm.

Lennox Adds New Industrial Heater Series

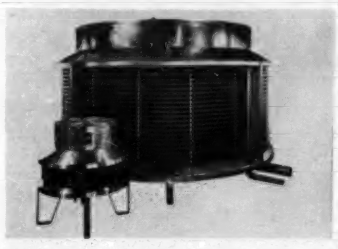


● New to the line of Lennox industrial heaters is the "OG" series, available in output ranges of 280,000 B.t.u.h. and higher, with oil, gas, or combination fuel burners, it was announced by the Industrial Div., Lennox Industries, Inc., Dept. AH&RN, P. O. Box 1294, Des Moines 5, Iowa.

Designed for either unit heater use or for central applications, the new line features blower operation quiet enough to be suitable for school, church, and store as well as industrial applications, the manufacturer claims.

Engineering features include an integrated burner design with new "dual fuel" burner. For combinations, gas and oil are introduced at different points in the same firing assembly — with instant change-over by a single switch.

The combination air blower and the individual draft blower are mounted on a single shaft and driven by a single motor.



RELATIVE size of the 3-ton and the new 100-ton air-cooled Fandaire condensers is shown in this photo.

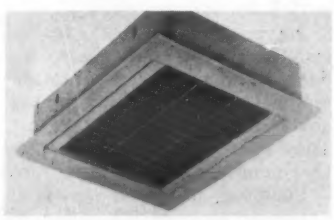
F5 Expands Line of Air-Cooled Condensers

● Its line of air-cooled condensers has been expanded to include a 100-ton completely self-contained unit, according to F5 Air Conditioning Corp., Dept. AH&RN, 1815 South Maybelle, Tulsa, Okla.

The new condenser contains all of the advantages of the smaller "Fandaire" units, the company said.

These include circular coil design which permits counterflow of the hot refrigerant against the cooling air and straight through flow which permits positive condensate drainage since each coil circuit is one continuous length of a single tube, the manufacturer stated.

The fans provided on the 100-ton condenser are cast aluminum with adjustable pitch blades.



Radiant Heater Has Mild Fan Action

● Introduction of its new "Pyrolite," model RC, a recessed ceiling heater, marks the first time that radiant heat has been made available in such a unit, claims Berko Electric Mfg. Corp., Dept. AH&RN, 212-40 Jamaica Ave., Queens Village, N. Y.

Rated at 1,000 watts, Pyrolite is capable of heating large areas with unusual efficiency, according to the company.

"The new unit is mildly fan-forced so that the proportion of convection heat which would normally stack at the ceiling is, instead, gently circulated throughout the room supplying added comfort," the announcement said.

Flexible Metal Connector Developed

● A new flexible metal connector has been developed especially for refrigerant lines by the Korfund Co., Inc., Dept. AH&RN, 48-53A 32nd Pl., Long Island City 1, N. Y.

The connector is claimed to eliminate transmissions of vibration and pulsation from air conditioning and refrigeration equipment. Korfund "Flex-Hose, Type F," bears a one-year written warranty against defects in workmanship and materials.

"Type F Flex-Hose is made from corrugated, high-quality, seamless bronze tubing which is protected and reinforced by a covering of a new, unique braid design providing especially high burst strengths," the announcement said. "It has sweat-fitting copper tube ends for attachment to rigid metal piping.

"The hose will withstand continuous operating temperatures up to 400° F. and working pressures up to 150 p.s.i., depending upon methods and materials used in attaching it to the rigid piping," according to the manufacturer.

More details on the products described on this page may be obtained by writing the manufacturer at the address given in each story.

Valve Pierces 2 Sizes of Tubing

● Introduction of a new tube piercing valve, the HP-810, for piercing ½ and ⅝-in. o.d. tubing, has been announced by Madden Brass Products Co., Dept. AH&RN, Aurora, Ill.

One valve pierces two tube sizes.

"The HP-810 is designed to simplify use by servicemen, in that it can be installed in any position without use of special tools or openers," the manufacturer points out.

NEW *leak detector for air conditioning and refrigeration servicemen*

GENERAL ELECTRIC H-6 LEAK DETECTOR

Locates Leaks in a flash!

Now General Electric offers a new, low-cost, electronic leak detector that is sensitive, easy to use, and permits positive location of leaks in systems that contain Refrigerant gases such as Freon, Genetron, and Isotron. Designated the Type H-6, this leak detector utilizes a unique probe that actually lights up the moment it passes near a leak.

Designed especially for air conditioning and refrigeration servicemen, the portable H-6 is lightweight and features a wide range of sensitivity selection through the use of a single control dial. In addition, an automatic balance feature helps in locating leaks even when room air is contaminated with Refrigerants.

The easy-to-use H-6 leak detector is ready for operation 60 seconds after it is turned on. To test for leaks, you simply move the probe along seams or around joints. When the tip passes near a leak, the probe flashes. After locating a leak, the detector recovers in less than two seconds.

The faster, more reliable leak detection afforded by the H-6 can easily mean more service calls per day, greater customer satisfaction, and greater profits to you.

See and operate the new H-6 leak detector now on display at leading refrigeration supply houses throughout the country. You can also get more information by contacting your G-E Apparatus Sales Office or by writing for bulletin GEA-6827. General Electric Co., Section 585-78, Schenectady, N. Y.

Operating instructions plus helpful servicing hints are imprinted on the back of the leak detector control unit.

Attractive leather case is available and provides a convenient means of carrying equipment and accessories. The detector unit can remain in the case, even when in use.

Progress Is Our Most Important Product

GENERAL ELECTRIC

TECHNICAL CENTER

By Frank J. Versagi, Technical Editor

Foamed Plastic Thermal Insulation

As this article suggests, the industry is being invaded by plastics. Acrylics, epoxies, phenolics are only some of the terms used to describe electrical and thermal insulation, valve components, coatings, tubing. In future issues, Technical Center will discuss the several plastic families and provide reference material for all who encounter these invaders in design, manufacture, and service.

The nearest thing to a revolution in technology that the cooling industry has experienced in a long while is the rapidly increasing use of foam-in-place thermal insulation.

Truck and trailer bodies, buildings, refrigerators, drain line openings are typical uses of this new material and technique.

The technique, itself, is fascinating to watch. On the assembly line of one manufacturer of commercial display cases, for example, a worker pours measured amounts of two liquids into a paper cup and stirs them. Pouring them into the cavity through which holes will later be drilled for refrigerant lines, he works on something else while the chemicals foam and expand like a moving, living thing until the semi-solid mass fills the entire cavity. A few minutes later the material is rigid enough to handle and work.

A significant property of the foamed insulation materials is their adhesiveness. The bond between the insulation and the steel shell of a case, for example, has greater strength than the plastic. Of themselves, the rigid foams are strong enough to allow the omission of studs and other supporting members in a truck body shell, as another example.

One manufacturer has already announced its use of foamed insulation in a standard line of refrigerators; a major trailer manufacturer has tested foam-in-place materials and is reported ready to begin commercial production; many companies are getting the feel of this new technique by using it here and there in their products.

Before we look at the actual materials involved and consider their properties, it is well to follow a case history in the application of foam insulation.

As part of a remodeling and expansion program of a major West Coast creamery, a 12 x 40-ft. wall was to be insulated. A slow-mixing formulation manufactured by American Latex Products Corp., Hawthorne, Calif., was metered through a portable mixer and run through an adjustable mixing head, through a flexible polyethylene tube into the space between the wall facings. (See pictures.)

Slowly, the mixture expanded and filled the entire wall cavity exerting a slight positive pressure. Because it adheres to the wall surfaces as it cures and hardens, the foamed material becomes a structural member as well as thermal insulator.

This basic technique is used in filling small and large cavities. The materials are chosen according to the properties desired. The amounts are determined after the expansion ratio of the liquid materials and total volume to be insulated have been considered—whether only several teaspoonsful or many gallons are required.

Foaming is not new as a technique. Most readers are familiar with foam rubber which came into extensive use in furniture and automobiles. Rigid foamed polystyrene, well known by the trade name "Styrofoam," has found extensive use as thermal insulation in buildings, cold rooms, and some fixtures.

Many plastics lend themselves to foaming, and some are foamed in intricate molds, producing complex shapes with no seams or partitions. Key to foaming is the generating, in place, of some gas which will expand and fill the cells of the plastic material. The gas may be nitrogen, carbon dioxide, or some other.

The gas is formed during a chemical reaction which is instigated either by temperature or self-inducement between the chemicals mixed with the plastic. Naturally, the amount and rate of gas formation is critical, and correct amounts of **foaming agents** are determined experimentally for each new formulation.

Polyurethanes are the plastics being discussed here. They are also frequently referred to as **isocyanates.**

While foamed polyurethanes can be flexible, this discussion is concerned with the rigid foams used for thermal insulation, materials with K factors around 0.11 to 0.20. In the laboratory, isocyanate foams have been produced with K factors less than 0.09.

Thermal conductivity depends on the density of the foam, the types of cells formed, and the gas used for expanding. For practical purposes, these factors are out of the hands of the user; his efforts are limited to following the application recommendations of the foam suppliers.

Until very recently, expanding of the basic polyurethane materials was accomplished by carbon dioxide, and the chemicals mixed together were chosen by the amount of carbon dioxide needed to prepare a foam with the required properties.

Coincidentally, the foam which shows greatest promise for use in the refrigeration industry makes use of a refrigerant as the foaming agent. At its best, 1¼ in. of this new insulation is equivalent to 3 in. of conventional insulation. The refrigerant blown foams are less expensive than conventional carbon dioxide blown foams, says Pittsburgh Plate Glass Co.

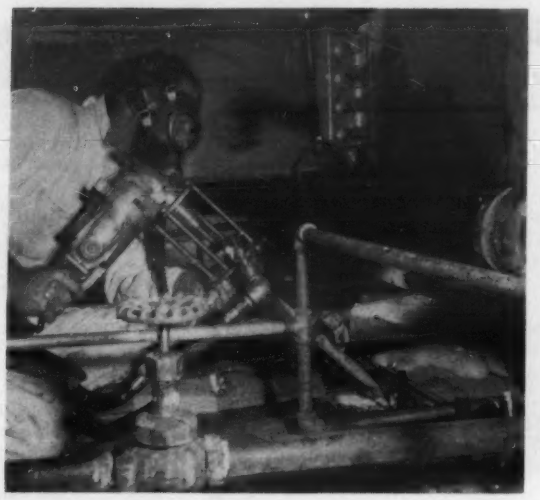


FIG. 1—Between the double ceiling, an American Latex Products Corp. workman operates the mixing head of a portable foamer. The two polyurethane components are metered at the equipment in the room below, pass through the adjustable mixing head, through a flexible polythylene tube into the space between the wall facings.

FIG. 2—As the mixed polyurethane components flow into the space between the wall facings it commences to foam and rise, with little pressure and heat, perfectly bonding itself to the plaster and open steel "X" studs.

FIG. 3—As the polyurethane foams, the slight pressure of reaction thoroughly forces itself into every crack and orifice in the wall, completely sealing it. Since polyurethane also is an excellent electrical insulator, it does not affect the operation of switches or other electrical gear.

FIG. 4—This photograph illustrates how tenaciously the polyurethane bonds to such materials as cement and plywood and how evenly it is distributed. A door and part of the wall has been removed. The polyurethane has adhered so tenaciously that plaster beads extending through the steel mesh lath have remained firmly affixed to the foamed plastic.

Servicemen, testing for refrigerant leaks on fixtures insulated with the refrigerant-expanded foams, must be careful not to disturb the foamed insulation while testing. Movement or mild blows on the insulation may break some of the sealed cells containing refrigerant and give a positive test on the leak detector. Such misleading detector readings have already been reported by servicemen.

Polyurethane foams are fire retardant, rot-proof; will not pack or dust under vibration, and are not affected by solvents, acids, chemicals, sunlight, or air. They reject moisture even when the moisture is under pressure.

Foaming in place gives an unbroken mass of insulation, as seen in Fig. 4. There are no seams at joints of slabs of material—a significant disadvantage of the fabricated rigid foam materials. Structural strength of the isocyanate rigid foams allows reduction in assembly and material costs where supporting members are eliminated.

When properly accomplished, the foaming traps the refrigerant in the cells of the finished material, adding greatly to thermal properties.

The refrigerant - expanded polyurethanes lend themselves to automation since they set to a semi-rigid mass in about three minutes and can be handled in about 15 minutes. Maximum strength is obtained after 24 hours aging.

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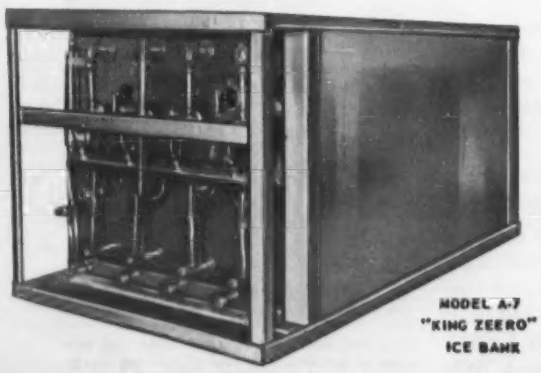
The "King Zeero" ICE BANK is designed to deliver 32° to 34°F. ice water for recirculation through air cooling coils in exactly the right amount when and where it is needed. It levels off "peak" and "valley" loads. Peak loads many times compressor capacity are easily handled. Ice Banks may be added to increase existing capacity. Refrigerant: Freon, Methyl Chloride or Ammonia.



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CAPACITIES - 500 lbs. to 30,000 lbs. (72,000 B.T.U.'s to 4,320,000 B.T.U.'s) in a single unit. Multiple units may be installed.

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Manufacturers of Ice Builders -- Ice Builder Cabinets - Ice Banks

How Refrigeration Man Will Have To Change Thinking When Handling Air Conditioning

MIAMI BEACH, Fla.—Some adjustments the refrigeration man will have to make when he starts dealing with air conditioning were pointed out by Guy R. King of the Vocational Div., Santa Monica City college, Santa Monica, Calif.

"A man who is only experienced in low temperature refrigeration is amazed at the size of equipment found in an average air conditioning job," he told engineers attending the 49th annual convention of the National Association of Practical Refrigerating Engineers here recently.

"Some express disbelief that such sized equipment is necessary," he added.

But, he pointed out, a cold storage plant is well insulated and has very little air change. An office building, on the other hand, has little or no insulation and requires from two to six air changes an hour. Auditoriums need even more. Thus, large compressors and condensers are needed for what looks like a small coil.

Another difference is that in refrigeration, 1½ to 2½ hp. are required per ton of refrigeration. In air conditioning, with higher suction pressures, the figures are nearer 1 hp. per ton.

No Frost To Guide In Making Adjustments

"A thing that sometimes bothers the refrigeration man new to air conditioning," King added, "is in trying to make adjustments without frost as a guide.

"We sometimes don't realize how much we depend on frost indications until we have to do a job like setting an expansion valve without it.

"There is no visual difference between a badly starved coil and a condition that will slug the compressor. Temperature and superheat readings are the best indicators of expansion valve settings.

"Some operators, when setting valves, shut off fans and block controls to get lower temperatures so they can watch the frost line.

"The trouble with this method is that a frost line at no load is not necessarily the frost line at full load.

"Another difference some refrigeration men have to learn is the trouble that frost can cause in an air conditioning coil.

"It is amazing how soon a coil handling several thousand cubic feet of air can be completely plugged with frost if the temperature is a little too low—and how long it takes to get this frost melted out once it has formed."

Difference with Heat Pumps

With heat pumps, King said, the biggest difference is that to get satisfactory temperatures for heating, head temperatures and pressures must be much higher than normal.

"Even at these high pressures, heating surfaces are at a lower temperature than with steam or hot water coils," he continued.

"So a great deal more air circulation must be used in such a system than in a standard heating system.

"For these reasons we must disregard what past experience tells us about normal head pressures and normal heating supply air temperatures. Check manufacturer's information thoroughly before trying to change such conditions."

King said that some operators, on their first air conditioning job, have had little or no experience with fans or blowers.

"They find it easy to increase the speed of a fan 10% and get a 10% increase in air delivered. Then they wonder why they have a rash of motor troubles.

"That is, unless they know that a 10% increase in fan speed means a 30% increase in power required. Or if the fan speed is doubled, the power is increased by eight times."

Check Filters First

King pointed out that filters are the first thing to check when air deliveries fall off. Restrictions in supply or return air—such as a mashed duct or boxes piled in front of a return air outlet—are the second thing to check. These problems cannot be solved by increasing the fan speed, he noted.

"One of the first rules to observe with air conditioning controls is to be sure exactly what they control before trying to change adjustments. Even then, keep track of the point changed from. Then if the change does not do what was expected, it can always be reset back to the original point.

"Experts have spent sometimes as much as a week balancing out a large, complex air conditioning system. An operator who lives with the system year in and year out, and who knows the functions of each control, can make slight modifications in the balance that may better match seasonal variations than one setting left for all time.

"But before changing any control setting, the operator must know the function of each part of the system and the part it plays in the entire system balance."

King added these points on air conditioning controls.

Never Cycle Fan

"A fan should never be cycled. The abrupt change is disturbing to occupants. During the off cycle, air in the room can stratify and stagnate. So, if it is desirable to change the air volume, it is done with dampers.

"It is also undesirable to completely shut off refrigeration on coils unless air is by-passed around them. A coil which has been refrigerated is wet with condensate. If refrigeration is discontinued, but air continues to flow over the coil, this water is re-evaporated.

"This raises the humidity to an undesirable point. By by-passing the air around the coil, this moisture is not re-evaporated into the air stream. This by-passing must be done with dampers.

"Dampers are fundamentally valves in the air distribution system. A complete and automatic air conditioning system must have electric controls to start and stop compressors, pumps, and blowers. It must have valves in the fluid flow lines such as steam, refrigerant, and water lines. And it must have dampers or air control valves in the duct system.

"All these controls, valves, and dampers must work together. That is the reason a change in the setting of one particular control will not always change all conditions, but may upset the balance of the control system.

"Most control systems in a properly installed air conditioning system have been well balanced. If one control fails to function, it will upset this balance. But it should be found and corrected rather than tinkering with all the controls.

"A system can be designed to perfectly match only one design condition. When other than this design condition occurs, temperatures or humidities may vary slightly from those designed for. It is such conditions that are most apt to give the new operator a headache. To know what to do the operator should know what conditions are most acceptable to most people.

"Seventy degrees temperature and 50% relative humidity is a good starting point for winter. But if it is in an area where people are physically active, or where people are acclimated to lower temperatures, 68° may be more suitable.

"If steaming windows cause too much trouble at these conditions, the relative humidity can be brought lower.

"But usually the temperature should be raised about 1° for each 10% the relative humidity is dropped.

Watch Shock Effect

"For summer, 75° and 50% relative humidity is a good starting point. But sometimes this must be modified to reduce 'shock effect.' A sudden change of about 20° to 25° F. is about the maximum that can be experienced by most people without discomfort.

"In an office building when most people enter in the morning and stay all day, this may not be a problem. But in a store where customers come in off a street where temperatures are 100° or above, the inside temperatures should be higher, even if the clerks think they are too warm."

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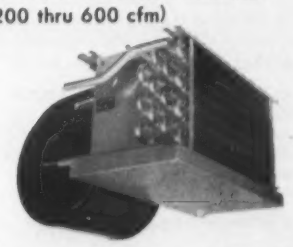

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CABLE: CLICONI LOS ANGELES

QUICK and easy installation is a top feature of the new line of Westinghouse room air conditioners. Mobilaire Deluxe models (shown here) can be installed in casement, jalousie, awning, or hopper type windows with the use of an adjustable mounting frame or can be made mobile with an easy rolling Mobile Cart.

MOBILITY has been highlighted in Westinghouse models for 1959. Mounted on the Mobile Cart accessory the conditioner can be easily rolled to any window in the home for use.

Westinghouse Products for 1959--

(Concluded from page 1)

line is being shown at the Winter Home Furnishings Market now being held here.

Chet Paulson, manager of the room air conditioner department, said the line was designed for mobility, ease of installation, high capacity, and ultra-quiet operation as the main features following the success of the firm's one Mobilare conditioner model in the 1958 line.

Survey Indicated Desire For Mobile Units

"The success of this model and several surveys we conducted on what people want in a room air conditioner," Paulson said, "proved to us that mobility and ease of installation are of prime importance to the customer."

Although the new line has only eight models, the department manager points out that "advanced design and features give these units the flexibility to meet any cooling need."

Each model is easily portable with the use of the "Mobile Cart" accessory, it was noted.

"The air conditioner mounts securely on the cart and can be rolled from room to room wherever cooling is needed. The cart adjusts quickly to window sills up to 36 in. high.

"For double hung window installations, an adjustable mounting frame, with no individual pieces to assemble, allows installation in minutes. The complete line can also be installed in casement, jalousie, awning, or hopper type windows."

All models have the adjustable "No-Draft" grilles.

A new, permanent "permafoam" air filter located just inside the front panel, is easy to remove for cleaning, the company said, adding: "It washes and wrings dry like a sponge and is easy to replace in position."

The control panel on the Deluxe models is concealed behind a swing-down door. Two butterfly switches control the unit for multi-speed fan operation as well as circulation and cooling.

A variable ventilation control permits the user to change the air in the room at any desired rate while an adjustable thermostat maintains a chosen comfort level, it was pointed out.

All Super models have "Auto-Therm" cooling which "automatically controls the cooling and prevents any frost build-up on the evaporator coil," according to the company. Two butterfly switches control the complete operation of these models.

Both the Deluxe Mobilaire and Super Mobilaire models are available in 1 hp., 115 v. and 230 v.; 1½, hp. 230 v.; and 2 hp., 230 v.

Refrigerators Described

Of the two refrigerators made by the new process, one is a 13-cu. ft. model, designed horizontally, that in the home is either built-in or rests on base cabinets. The other is a 5-cu. ft. model for efficiency apartments, trailers, recreation rooms, and physicians' offices.

W. R. Arbuckle, manager of the Westinghouse refrigerator-freezer department, said the new manufacturing process is especially practical for producing special models of refrigerators in limited quantities where tooling costs of conventional models would be prohibitive.

He said essentially, the process involves lamination of two sheets of aluminum to a layer of expanded polystyrene insulation. Flat, rectangular panels of these materials are cut to lengths and widths required by the refrigerator cabinet size. Ordinary electric saws notch corners and the panel is then folded into the cabinet shape.

Automatic Defrosting Refrigerator-Freezer

Regarding the completely automatic defrosting refrigerator-freezer combination, Arbuckle said:

"Westinghouse engineers have combined a new principle with their proven experience in automatic defrost systems over the past ten years, and have perfected a system that is so efficient that frost does not even form on the frozen food packages being stored."

The secret of the system, engineers point out, is the controlled movement of refrigerated air through the areas where food is stored. In the refrigerator compartment, the cold injector system constantly circulates the air. As the air passes over a refrigerated plate concealed in the back of the compartment, moisture is condensed from the air and disposed of automatically.

In the separate freezer compartment, the circulating air is passed over a concealed refrigerated plate which condenses excess moisture. At the proper time, determined by a door counter, the plate is warmed and the water disposed of automatically, the announcement said.

"Special storage features of the refrigerator section include a meat keeper that will keep fresh meat seven days without fear of spoiling, an egg keeper that holds 24 eggs and fits beneath the meat keeper, and a lighted temperature control that changes color as the setting is advanced toward 'coldest' and tells the homemaker the operating temperature of her refrigerator," it was noted.

"In addition, there are twin vegetable crispers, glide-out shelves, a butter and cheese keeper and child-safe 'Ceramicor' magnetic door seal.

"The freezer portion of the new automatic defrosting model will sharp freeze foods at sub-zero temperatures and keep up to 178 lbs. of foods frozen solidly. There is no chance for thawing during the defrost cycle."

Here's what you get today

IN THE "Serviceman" TESTING THERMOMETER

Standard

A lot of improvements have been made in this instrument that was so excellent from the start:—

- Bourdon tube is now permanently leak tight.
- Bulb clip (see photo) is placed to make reeling of tubing still easier.
- Spiral spring guard at bulb prevents crimping and injuring capillary tubing.
- "Recalibrator" screw out in the open on back of case. No need to remove crystal to get at "Recalibrator."
- Crystal is sparkling Plexiglas (Lucite). More stain-proof and scratch-proof. Retains its original beauty.
- Internal stop protects against excessive temperatures.

Today's "Serviceman" tests to 40 below. It is made in two models: Standard type (above) and DeLuxe 3-scale type (right) showing Refrigerant -12 and -22 pressures in two added color scales. We haven't been satisfied just to make it the best thing of its kind; we've made it even better.

Deluxe with 2 pressure equivalent scales.

Interior showing more convenient reeling and accessible "Recalibrator."

See it at your jobber's

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Utilizing advanced design Molecular Sieve cartridges, these new Remco Filter-Driers combine unequalled drying efficiency, effective acid removal, generous flow capacity and *depth* filtration.

The massive depth filter completely removes all scale, sludge, carbon and other particles as small as 100 microns. Molecular Sieves adsorb and retain large quantities of moisture even at refrigerant temperatures of 140F, and keep moisture concentrations below 10 ppm. Acids are reduced far below dangerous corrosion limits.

Compact in size, the filter-driers are U/L Approved and may be used for Refrigerants 12 or 22, Carrene or methyl chloride. Working pressure is 500 psi; minimum bursting pressure, 2500 psi.

REPLACEABLE CARTRIDGE TYPE units use an "O" ring for a positive, leakproof flange seal. From 3 to 40 tons, with ⅜" thru 1⅝" sweat connections.

SEALED TYPE filter-driers are available in 1 to 12 tons, with ¼" thru ⅝" flare and ⅜" thru ⅞" sweat connections.

"T" FITTING TYPE in 2 to 6 tons, are readily adaptable to systems using conventional "T" driers.

Remco Molecular Sieve Filter-Driers are available at leading wholesalers. Ask your wholesaler for more information, or write for Bulletin MS-1. Remco, Inc., Zelienople, Pa.

REMCO

MANUFACTURERS OF ADVANCED REFRIGERATION PRODUCTS
Filter-Driers · Liquid Indicators · Receiver-Driers · Check Valves · Safety Devices · Frost-Tite Flare Nuts

'Information Please'

How Can We Tell Motor Rating? What Is Reason for Short-Cycling On Display Case? How Can We Check for Moisture, Acid?

COLUMBUS, Ohio — These were among the questions of general interest asked at a series of "Information Please" sessions during the 21st annual meeting of the Refrigeration Service Engineers Society.

Q. How can we tell when a motor which is labeled 1 hp. is 1 hp.? I have replaced motors of equal rating only to find one not able to handle the load. Generally, new motors do not have the guts that older motors had.

"There are several factors involved here," replied Bryant Britt of Wagner Electric. "First, general duty or fan motors are misapplied when they are put on compressor duty — even though both are rated at 1 hp. One is designed for a high starting load; the other is not.

"Older motors which do not conform to NEMA frame sizes had the same torque as newer motors, but their greater mass allowed them to hold high loads for longer times.

"Measure voltage at the motor terminals; check current draw when full load r.p.m. has been reached, and you can tell what the actual rating of your motor is," Britt concluded.

Q. What is the reason for short cycling on a commercial display case?

"While each situation should be reviewed specifically," answered H. Scott, Tyler Refrigeration, "chronic short cycling as a general thing is due to too much machine."

Q. Is there any good universal solvent for cleaning out a system after a burnout?

"Unfortunately, no," admitted Dr. Walter O. Walker, University of Miami, "but Refrigerant-11, -113, and -111 have been used either alone or in mixtures with ethanol (ethyl alcohol).

Replying to a question on how to test for acid, Walter offered that the standard test papers and indicators like litmus are quick and reliable. "And, then one can always use the dropping fingernails test after handling a system containing acid."

Q. Where should we connect the oil return line from an oil separator on multi-stage compressors?

"If you're talking about a high- and low-stage compressor combination, connect the oil return line from the separator to the high stage crankcase. You're trying to keep oil from the low-side evaporator," offered Gene Hamilton, Worthington.

Q. Why has ethane been abandoned as a refrigerant, and why is it priced so high?

After some discussion among the panel members, it was proposed that the price of ethane is because of limited demand and low production. It is being abandoned as a refrigerant chiefly for safety reasons, with some states not even allowing it, or propane, or LPG at all.

Q. How is it possible to tell, in a practical way, whether there is or has been either moisture or acid in a system?

"If the water got in yesterday, you won't be able to tell much," advised Dr. Walker, "but if the water has been there for a while in large amounts, you will find rust and sludge."

"There are simple chemical tests available which allow the field man to determine what chemical reactions may have taken place in a system," added John Spence, RSES educational director and moderator of the information sessions. "Written by Frank Versagi, they appeared in the official society magazine."

More recently, informed Walker, General Chemical ("Genetron") has published a method of sludge analysis which is available in brochure form.

Q. What is your opinion of placing a heat exchanger between an oil separator and the condenser on a low temperature system?

"You must have superheat in your oil-refrigerant vapor mixture for the oil separator to do its job," warned William Pollock, Temprite Products. "The hotter the mixture, the more efficient the oil separation. Unless there is some necessary effect you are attempting to accomplish, I would not recommend a heat exchanger between the separator and condenser.

PREVIEW

Special Features, Demonstrations Set For Air Conditioning, Heating Show

Information received by the NEWS recently from Airserco Mfg. Co., Drayer-Hanson, and General Electric Co. indicates these firms have scheduled special features or demonstrations for their exhibits at the 14th International Heating & Air Conditioning Exposition in Philadelphia Jan. 26-29.

(These reports were received too late for inclusion in the Dec. 29 "Exposition Preview" issue.)

Airserco

Airserco Mfg. Co. will show for the first time its new model 8000 heavy-duty hermetic compressor analyzer and electrical tester especially designed for air conditioning and refrigeration.

A demonstration of the analyzer will be staged every half hour in the firm's booth. Tom Pendergast, formerly with Tecumseh Products Co. and now vice president of Employers Insurance Co., has consented to operate the analyzer using actual equipment for the demonstration, it was pointed out.

Airserco also will formally announce five new instruments.

Drayer-Hanson

At its booth, Drayer-Hanson, Div. of National-U.S. Radiator Corp., will make available to those who qualify a comprehensive performance measurement device developed for engineers, architects, planners, and installers.

Offered will be a representative master chart giving new fan performance curves for horizontal and vertical air handling units, from 0 to 8 in. total static pressure.

Giveaway is claimed to be the first to come out of the industry that will allow users to determine instantly, from a single point, such factors as system characteristics, motor horsepower, c.f.m., static pressure, and outlet velocity—and, in addition, allow for accurate performance predictions for multi-speed operations; provide a simplified method of establishing corrected fan r.p.m. in a given installation.

It is planned that a 20-set kit of curves will ultimately be furnished inquirers by the designer-developer, without obligation.

General Electric

A leak detector exhibit designed to permit show spectators to test all models against sample leaks has been planned by General Electric Co., the firm's Apparatus Sales Div. announced.

In addition to G-E leak detector Type H-2, H-3, H-4, and H-5, the Instrument Dept. will display its new Type H-6 detector, especially designed for use by air conditioning and refrigeration servicemen.

Featured as part of the G-E exhibit will be heating controls which include a new outdoor control system and a straight-line thermostat, both built by the firm's Appliance Control Dept.

G-E motor displays will include the "torture test" of a small polyphase motor which is periodically operated under water.

Multi-Vent Announces Plans for Show Booth

CHICAGO — The Multi-Vent Div. of Pyle-National Co. announced that it will display its low velocity air diffuser in modular, linear, and unitary types and the combination air-lighting unit, the Multi-Vent "Troffer," at the International Heating & Air-Conditioning Exposition in Philadelphia Jan. 26-29.

A **Must** for Sales
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101 TW
$9.90
Shpg. wt. 7½ lbs. (2 per ctn.)
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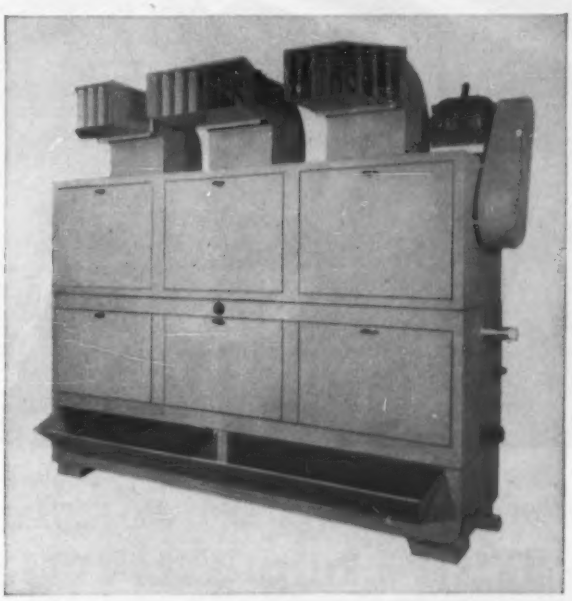
for high or low temperature —hot gas or water defrost

All refrigerants can be utilized—including ammonia and brines. Coil and drain connections can be made at the right or left independent of the blower section. Blowers can be adjusted to front, rear or top discharge on the site.

Capacities: 1240 to 26,700 BTU/hr. at 1° T.D.
Total surface area: 321 to 8360 square feet.
Fin spacing: 3 or 4 per inch.
Construction: heavy 12-gauge welded steel; hot-dipped galvanized blower wheels and scrolls; hot-dipped galvanized casings available.

Send today—for your copy of free bulletin and help on installation and refrigeration problems.



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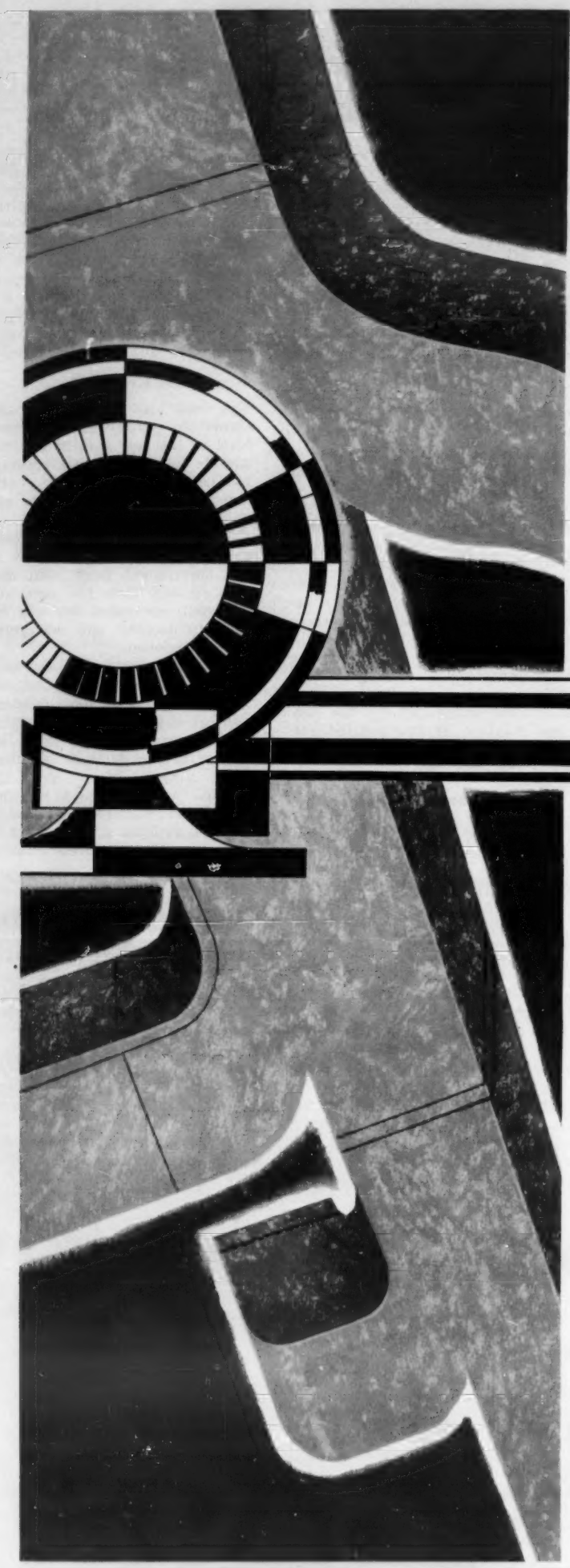

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Sure! When it comes to comfort air conditioning—residential, commercial, or industrial—changes have taken place over recent years putting practically all contractors and dealers in similar businesses.

Heating people are in cooling—cooling people are in heating—and the NEWS is their *modern* source of up-to-date information on the whole field. The NEWS is now the "newspaper of the industry" for heating as well as cooling.

Just as you read the NEWS each week for vital, timely news, so do your distributors, contractors, dealers, and prospects.

Mr. Heating Manufacturer: Take advantage of this new force in your business! Act now! Plan your complete unit or parts advertising in the *weekly* newspaper of the air conditioning (heating and cooling) industry.

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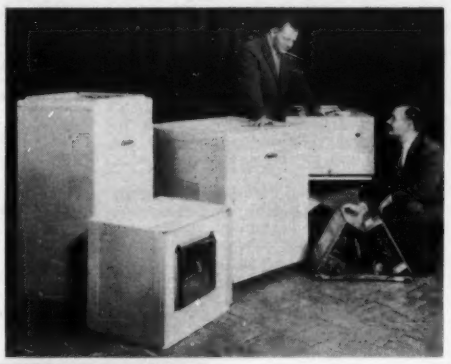
FOLLOWING the unveiling of Perfection's "Forward Trend" in residential heating, Perfection vice president-sales and advertising, Carl W. Millsom (right) answers questions from Perfection's 19 sales representatives who attended their recent sales conference held at the Perfection plant in Cleveland. Assisting Millsom in presenting the new furnace models is Carl Strack, furnace sales manager. Typical models in various sizes from left to right include the Trimline, the Regulaire, the Stylist, and another Trimline, all upflow gas models. Directly behind Millsom are the new Stylist and Regulaire counterflow models in the gas-fired line, followed by the new oil-fired Trimline and Regulaire.



BILL SMITH, air conditioning sales manager, (standing) talks over the ease of installing Perfection remote central systems with Marion Miller, western division manager. Directly in front of Smith is one of Perfection's new 3-ton remote condenser models which can be used with a choice of any of the evaporator units surrounding it.

TOM CRIDER, chief engineer air conditioning, (right) explains some of the features in one of Perfection's new Tuckaway heat pumps to members of Perfection field organization salesmen. The men, left to right, are District Managers Fred Greer and Phil Pierce and Regional Manager Marion Miller.

Perfection Line--

(Concluded from Page 1, Col. 4)

to the five upflow models released late last year, also has the Electro-Magic blower control as well as three-stage fire.

Stylist series has six upflow and four counterflow units from 75,000 to 200,000 B.t.u. capacity. Both Regulaire and Stylist models have the World's Fair styling.

Trimline series is completely new with five upflow and six counterflow models with a choice of belt or direct drive blowers in several sizes.

In central air conditioning, the "Tuckaway" self-contained horizontal air conditioner line has been broadened to include a 2-hp. model, two 3-hp. models, (single or double compressor), and a full 5-hp. (double 2.5-hp. compressors) model.

Carl W. Millsom, Perfection vice president, announced that Perfection would now furnish builders and contractors refrigerant in special refillable containers through its regular distributor-dealer channels.

Claiming this as the first offer of its kind in the industry, he expressed hope that it would go a long way toward easing the installation problems of the builder.

New remote units were presented in 2, 3, and 5-ton capacities with a choice of four evaporator components for adding summer cooling to any type of forced warm air system and two (3 and 5 hp.) evaporator-blower units.

The new remote condensers (2, 3, and 5 hp.) feature a new low-line silhouette with upflow air circulation. Inside, process valves, sight glass, and liquid receiver have been added.

The 2-ton model is offered in a complete package to include an evaporator coil and a 25-ft. factory-charged refrigerant line.

Tuckaway heat pumps now include 2, 3, and 5-hp. models with single or double compressor.

In space heaters, Perfection now offers 12 gas heaters in both vented and unvented types. These include a new line of circulator heaters and newly designed radiants. A new high-styled "Coronet" is offered both as a circulator or radiant in gas and in two sizes of oil heaters.

New oil heaters feature an exclusive "Midget Pilot" described as a burner within a burner. Fuel economies as high as 50% are claimed.

A newly designed wall furnace called the "Classic" is available in both gas and oil. It features heat-directing adjustable louvers, automatic controls, and hinged front panel. Oil model also has the Midget Pilot.

CORRECTION

In the list of exhibitors for the forthcoming 14th International Heating & Air Conditioning Exposition in Philadelphia, published in the Dec. 29 issue of the NEWS, Addison Products Co. was incorrectly listed as "Anderson" Products Co.

Supervisors--

(Concluded from Page 1, Col. 3)

Farrington Co., Goss Mechanical Contracting Co., J. W. Partlan Co., Stanley Carter Co., Donald Miller Co., United Engineers & Constructors, Inc., and Johnson Service Co.

A field superintendent for Farrington is currently a member of the local's executive board. William Kelley, president of the local, was a piping superintendent for United Engineers until last summer.

A. L. Zwerdling, attorney for the local, contended that there is nothing illegal about management personnel being members of a local.

He asserted that it is a common practice in building trades unions. He claimed that the men named in the NLRB hearing had worked their way up through union ranks as journeymen and had retained cards after becoming supervisors.

Their cards would be necessary if it became necessary for them to take journeymen jobs again, he added.

NLRB admits that there is nothing illegal about management personnel holding membership in a union. But it is illegal, the agency alleges, for them to hold a position requiring them to enforce union policies.

NLRB brought the charges against the companies on an original complaint by James P. Duffey, who asserts that he was refused employment by several of these companies because he did not have clearance from the local.

Builders Show--

(Concluded from Page 1, Col. 5)

has yet been published, NAHB officials said. They indicated, however, that most of last year's exhibitors have returned and some new ones have joined the ranks. Last year there were nearly 50 exhibitors of heating and air conditioning equipment, mostly concentrated in the Conrad Hilton and Sherman hotels.

A condensed convention program indicates no discussions of air conditioning or heating topics, though research presentations on the "Knoxville House" and the "South Bend House" may dip into these subjects.

Ranco-Wilcolator--

(Concluded from Page 1, Col. 5)

Ranco common at $21.25 will be exchanged for the other half.

Wilcolator is an important manufacturer of gas and electric oven controls, a business in which Ranco is not engaged, as well as some other types of controls. It is the view of the board of directors of Ranco that the businesses will complement each other.

If the proposal is accepted, the shareholders of Ranco will be asked to amend the Articles of Incorporation at the forthcoming annual meeting so as to provide for the proposed Series A preferred.

Shareholders of record on Jan. 16 will be eligible to vote.

TTMA Convention To Feature Refrigeration Roundtable Jan. 26-28

WASHINGTON, D. C.—A refrigeration roundtable, featuring the final report of the National Bureau of Standards on the reefer rating program, will be a highlight of the 18th annual convention of the Truck-Trailer Manufacturers' Association.

The convention will be held Jan. 26-28 at the Hollywood Beach hotel, Hollywood, Fla.

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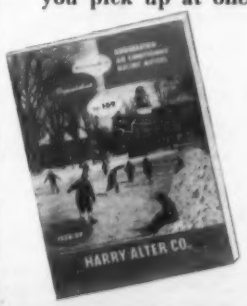

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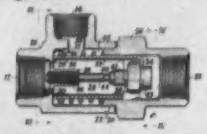
PATENTS

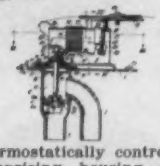
Week of Oct. 7 (Concluded)

2,855,151. MIXING VALVE. Rodin V. Lesovsky, Inglewood, Calif., assignor to Robertshaw-Fulton Controls Co., Greensburg, Pa.



1. In a mixing valve for hot and cold fluid, the combination comprising a casing having a mixing chamber with an inlet and an outlet for fluid, a wall extending inwardly of said inlet. . . .

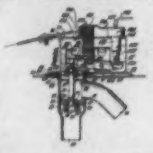
2,855,152. THERMOSTATICALLY CONTROLLED FLUID VALVE. Hugh J. Tyler, Jeannette, Pa., and Frank V. Mingrone, Milford, Conn., assignors to Robertshaw-Fulton Controls Co., Greensburg, Pa.



1. A thermostatically controlled fluid valve comprising housing means, a casing carried by said housing means having an inlet and an outlet for fluid therein intersected by a valve seat, a valve member in said casing movable between open and closed positions relative to said valve seat for controlling the flow of fluid through said casing. . . .

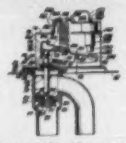
2,855,153. THERMOSTATICALLY CONTROLLED FLUID VALVES. Hugh J. Tyler, Jeannette, Pa., assignor to Robertshaw-Fulton Controls Co., Greensburg, Pa.

1. In a thermostatically controlled fluid valve, the combination comprising a mounting member, a casing carried by said mounting member and provided with an inlet and an outlet for fluid therein intersected by a valve seat, a valve member in said casing movable in opposite directions between open



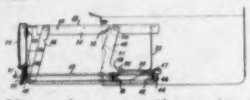
and closed positions relative to said valve seat, a valve steam carried by said valve member. . . .

2,855,154. THERMOSTATICALLY CONTROLLED FLUID VALVES. Hugh J. Tyler, Jeannette, Pa., and Frank V. Mingrone, Milford, Conn., assignors to Robertshaw-Fulton Controls Co., Greensburg, Pa.



1. A thermostatically controlled fluid valve comprising a casing having inlet and outlet passages intersected by a valve seat, a valve member movable between controlling positions relative to said seat, a valve stem carried by said valve member and movable therewith, a rotatable crank having an eccentric portion intermediate the ends thereof. . . .

2,855,262. REFRIGERATOR STORAGE TRAY. Verlos G. Sharpe, Dayton, Ohio, assignor to General Motors Corp., Detroit.



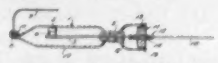
1. Means for supporting a tray in a cabinet comprising a track assembly disposed on each side of said tray, a plurality of rollers carried by said cabinet, said rollers being confined within said track assemblies and supporting said track assemblies for horizontal movement relative to said cabinet. . . .

2,855,484. THERMOSTAT. Kenneth G. Kreuter, Goshen, Ind., assignor to Penn Controls, Inc.

10. A thermostat comprising a generally disc-shaped mounting base, a thermally responsive element mounted

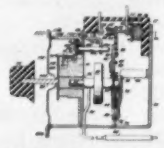
on the base, means for adjusting the response of said element to a predetermined temperature. . . .

2,855,485. HERMETICALLY SEALED THERMOSTAT. Henry E. Webking, Cuyahoga Falls, Ohio, assignor to Mechanical Industries, Inc.



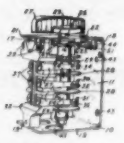
1. A hermetically sealed thermostat comprising a bi-metal strip, a metal casing surrounding and supporting the strip, means insulating the strip from the casing, said insulating means and said strip being clamped between opposed flattened walls of the casing at a position spaced substantially from either end of the casing, a contact button on said strip at a position spaced axially of the casing from the clamped area. . . .

2,855,486. THERMOSTATIC SWITCHES. Victor Weber, Greensburg, and William J. Sanders, Mount Pleasant, Pa., assignors to Robertshaw-Fulton Controls Co., Greensburg, Pa.



5. In a switch, the combination comprising fixed contact means, a movable switch member having an inoperative position and a plurality of controlling positions, bridging means movable by said switch member and being located adjacent said fixed contact means for cooperation therewith. . . .

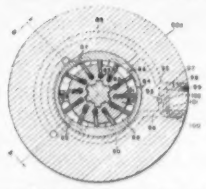
2,855,488. ELECTRIC REVERSING SWITCH. Dale F. Willcox, Villa Park, and Paul F. White, Glen Ellyn, Ill., assignors to Furnas Electric Co., Batavia, Ill.



1. In an electric switch, a C-shaped sheet metal frame having a wall provided with integral flanges projecting from its opposite ends, one of said flanges having a slot and an adjoining lug near its free end and the other having a cut-out extending inwardly from its free end and a lug on each side of said cut-out. . . .

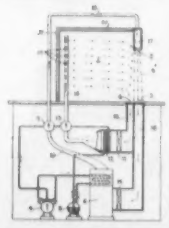
Week of Oct. 14

2,855,761. ENGINE DRIVEN REFRIGERATING APPARATUS. James W. Jacobs, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich.



1. In combination: a rotary driving member rotatable about an axis; a rotary driven member rotatable about said axis; a pump cylinder in continuous drive connections with one of said members and having a fluid intake portion and a fluid discharge portion. . . .

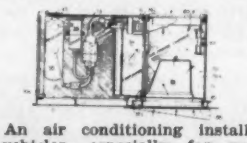
2,855,762. AIR-COOLED SYSTEM. Norbert A. Rohnder, Winterthur, Switzerland, assignor to Sulzer Freres S. A., Winterthur, Switzerland.



1. An air-cooled system comprising, in combination, a chamber having at least one substantially vertical wall, an opening in said wall, said opening having a top portion and a bottom portion, an air-cooling plant in which a refrigerant is compressed in a compressor, cooled in an air-cooled cooler. . . .

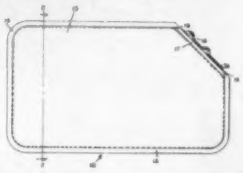
Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office. They offer only a brief summary of each invention. In some instances only the first part of the digest is presented.

2,855,763. AIR CONDITIONING INSTALLATION FOR PASSENGER VEHICLES. Walter B. Dean, Narberth, and David L. Buchanan, Whitemarsh, Pa., assignors to The Budd Co., Philadelphia, Pa.



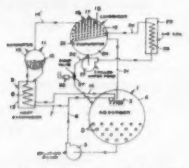
1. An air conditioning installation for vehicles, especially for railway passenger cars which have a floor, roof, sidewalls and aisle, comprising in combination, enclosure means forming with the floor and sidewall a lower compartment and an upper compartment....

2,855,764. TRUCK PLATE CORNER STRUCTURE. Orton S. McGuffey, Lansing, Mich., assignor to Tranter Mfg. Inc., Lansing, Mich.



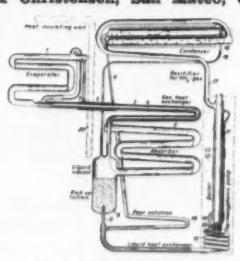
2. A heat transfer device for external service connection to a refrigeration device, comprising a hollow shell having a circulatory coil supported therein, which coil has adjacent intake and discharge termini. . . .

2,855,765. ABSORPTION REFRIGERATION APPARATUS. Wilbur C. Smith, Rutherford, N. J., and Harold F. Mason, Richmond Hill, N. Y., assignors to Worthington Corp., Harrison, N. J.



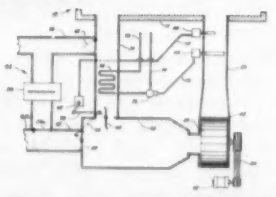
In an absorption refrigeration system including the combination of a shell and an inclining partition in said shell dividing it into an upper condenser section and a lower evaporator section. . . .

2,855,766. ABSORPTION REFRIGERATING UNITS AND REFRIGERATORS. Thore M. Elfving and Lars Bendix Christensen, San Mateo, Calif.



1. An absorption refrigerating unit comprising, in combination, a boiler, a condenser, an evaporator, an absorber, and a thermosyphonic pump connected in series to form a refrigerant circuit, said boiler, said absorber. . . .

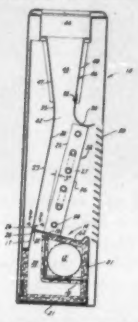
2,855,839. METHOD OF TREATING PERISHABLE ONIONS IN STORAGE. Ferdinand Austin Teigen, Minneapolis, Minn., assignor to D. M. Russell, Minneapolis, Minn.



1. The method of preserving and/or curing onions which includes confining fresh perishable onions for treatment with conditioned air within a substantially airtight insulated enclosure; heating and admitting air from said enclosure into a mixing chamber. . . .

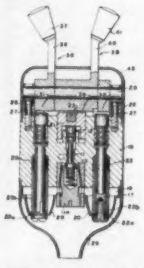
2,855,840. INDUCTOR. Lance L. Simmons, Detroit, Mich., assignor, by mesne assignments, to American Radiator & Standard Sanitary Corp., New York, N. Y.

1. An air conditioning unit comprising an elongated primary air wind box having a primary air inlet; said wind



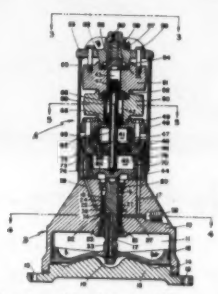
box also having a longitudinally elongated outlet opening in one of its longitudinal walls. . . .

2,855,958. VALVE FOR DISPENSING CARBONATED AND NON-CARBONATED BEVERAGES. Frank Welty and Raymond Welty, Youngstown, Ohio, assignors to Carbonic Dispenser, Inc., Canfield, Ohio.



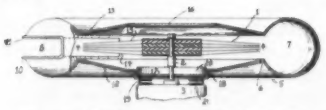
1. In a soft drink mixing and dispensing valve assembly of the type having a body member, a mixing and dispensing chamber within said body member, a first centrally disposed valve vertically movable in said body member, carbonated water inlet means leading to said first valve. . . .

2,856,116. MULTIPLE STAGE COMPRESSOR. Walter H. Hogan, Olmsted Falls, Ohio, assignor to Cleveland Pneumatic Industries, Inc., Cleveland, Ohio.



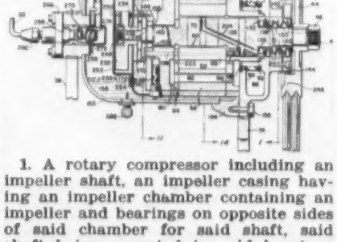
1. The combination with a cylinder and a piston reciprocable therein, of a central orifice through one end wall of said cylinder having a piston rod slidable therethrough, means supplying pressure fluid to said piston through said orifice. . . .

2,856,117. CENTRIFUGAL BLOWERS. Peter Schlumbohm, New York, N.Y.



An air blower for circulating air in a room by sending a directional beam of air in a horizontal plane and continuously changing the direction of the beam while the blower is in operation, said blower comprising a stationary mounting base, a vertical drive shaft rotatably supported in said base, said base having a pair of axially spaced supporting elements and a stationary connecting means therebetween. . . .

2,856,119. REFRIGERATING APPARATUS. Rolf M. Smith, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich., a corporation of Delaware.



1. A rotary compressor including an impeller shaft, an impeller casing having an impeller chamber containing an impeller and bearings on opposite sides of said chamber for said shaft, said shaft being mounted in said bearings and extending through said chamber, said impeller being drivingly connected to said shaft. . . .

(To Be Continued)

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DESIRE POSITION as service or installation supervisor—Ten years' experience. Positions held: service and installation manager, project engineer in commercial and industrial refrigeration, air conditioning and heating. Will relocate under satisfactory conditions. Will also accept field service engineer position. For full resume, please write BOX A6162, Air Conditioning, Heating & Refrigeration News.

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SALESMAN—AIR condition, heating and refrigeration—Must have thorough knowledge of refrigeration and air conditioning for one of Milwaukee's leading air conditioning firms. Excellent future with managerial opportunity; unlimited earning potential; job offers immediately between $10,000.00 and $12,000.00 yearly to the right man. Salary and commission; insurance and other benefits. ACE REFRIG. & HTG., 7001 W. North Ave., GL 3-1200.

SALES REPRESENTATIVES who are "on the ball" write us today. Several good concentrated territories open on manufacturer's agency basis. Self-contained air conditioners 3-20 tons, packaged chillers 3-15 tons, heat pumps 3-15 tons, combination roof mounted air conditioner-heaters 5-20 tons, condensing units 3-20 tons, residential units 2-5 tons. Write giving background, area covered, lines now handled, potential volume capable producing, complete details concerning your operation. Interviews arranged Philadelphia Jan. 26th through 29th. Write Pete Hatcher, Sales Manager, AMERICAN COILS CO., Rt. 524-Lakewood Road, Farmingdale, N. J.

MANUFACTURERS' REPRESENTATIVE desires sales heating engineer to sell throughout Florida. Experienced with York-Shipley industrial equipment, Weinman centrifugal pumps, RECO pressure vessels and heat exchangers. Liberal commissions. Excellent income possible by hard work and good selling. ESSEX HEATING, 8735 Southwest 116th Street, Miami 56, Florida. Cedar 5-0932, telephone.

REFRIGERATION ENGINEER to direct design and development section of small L. I. New York company. Prefer man with experience as project engineer on design and development of packaged industrial products including refrigeration and compressed air. Resume and salary requirements to BOX 244, Massapequa, New York.

EXCELLENT OPPORTUNITY for an ambitious and above average trained serviceman by firm in southwestern Ohio. Must know commercial, industrial refrigeration and air conditioning. This is permanent year round work, paid vacations, benefits. In reply state age, marital status, refrigeration experience. BOX A6165, Air Conditioning, Heating & Refrigeration News.

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COMPLETE HIGHSIDE and low side refrigerator systems. P91 compressor 115 V. 50/60 cy. F-12 Evaporator: 15¾" wide x 5¾" high x 12¾" deep, and static condenser. S-88 compressor 115 volts 60 cy. Freon 12; Evaporator 11" wide x 11½" deep x 9" high, and static condenser. Systems are charged and ready for installation. Sold $36.00 each FOB Chicago, Illinois. Send for free catalog on money saving refrigeration values. WALTER W. STARR, 2833 Lincoln Ave., Chicago 13, Illinois.

Air Distribution Requirements In Year-Round Air Conditioning

Part 3—Fundamentals of Equipment

By Frank D. Klein, Chief Engineer, Governair Corp.

The Condensing Cycle, though still another part of the system, can be likened to the lungs of the human body; it is the next most important adjunct of the "heart" or compressor function, in the refrigeration system.

Because the condensing cycle is dominated by the condensing apparatus itself the types available are outlined as:

Air Cooled Condensers

Water Cooled, Shell & Tube, or Shell & Coil

Evaporative Condensers

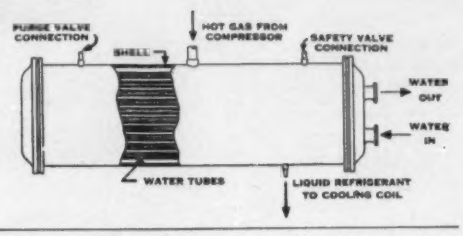
Variations of these three basic types are numerous, however their function is the same, to accept by transfer the heat of rejection from the compression cycle and discharge it from the refrigeration system to some suitable medium of secondary transfer.

To return for a moment to the simple refrigeration cycle we know that it is the purpose of the refrigeration system to remove Total Heat from the area concerned. Since this heat is in the form of energy, it cannot be disposed of by destroying it, for energy cannot be destroyed. Therefore, this energy as heat must be transferred, on acceptance by the refrigeration effect, from the area concerned to something or some other area where it can be dissipated in discharge and dispersed.

AIR-COOLED CONDENSERS may be compared to the automobile radiator. The refrigerant in the form of discharged gas is passed on to it from the compressor, where it is circulated through a series of tubing arranged in proper counterflow to the flow of air, induced by fan equipment, whereby through the difference in temperatures the heat borne by the refrigerant is extracted by the colder air and in turn discharged into the free air.

WATER-COOLED, SHELL-&-TUBE, or SHELL-&-COIL type condensers on the other hand substitute cool water as the medium of transfer instead of air. The discharged refrigerant gas is circulated through circuits of tubing around which is constructed a shell, or a single large tube casing (refrigerant-in-tube-type); through which cold or cool water is circulated, in and out.

FIGURE 54



The heat borne by the refrigerant is transferred to the cooler water medium, which is either wasted into the sewer or passed through a spray pond or Water Cooling Tower system whereby the heat absorbed by the water is ultimately discharged into the free air.

The refrigerant-in-shell type of this group of condensers reverses the places of the refrigerant and water and is today the most practical and popular type.

EVAPORATIVE CONDENSERS may be compared to the same basic method as the Shell-&-Tube or Shell-&-Coil type insofar as substituting water for the transfer medium. However, BOTH water and air are used and the tube circuits bearing the discharged refrigerant gas are not contained within a shell.

Induced air from fan equipment is passed over the bare tube circuits or finned tube circuits which are placed in the air stream, while at the same time cool water is sprayed over the tube circuits. The required water, thus heated, is evaporated by the heat from the condenser going into latent heat of vaporization, thus transforming the water into water vapor. The water vapor and heated air is then discharged by the fan equipment into free air. This rate of exchange takes place at approximately 1,000 B.t.u. per pound of water.

The above is, of course, fundamentally simple, to explain the cojunctive function of all. Their individual operation, selection, and application is far from being so simple. The technical evaluation and use of each is as follows.

THE WATER-COOLED, SHELL-&-TUBE CONDENSER

Refer to Fig. 54 during this discussion, where a reproduction of a typical Shell-&-Tube type condenser is shown. Note that it is of the type where the water transfer medium is passed through the tubes and the refrigerant gas passed into the shell.

From the previous text it was determined that the refrigerant in the cycle cannot stay in its liquid form when heated to a point corresponding to its saturation pressure, which, of course, happens throughout the refrigeration cycle after being metered to the evaporator to find its way back to the compressor for ultimate compression.

When this heat, which has caused the refrigerant to change its form from liquid to gas, is removed and it is cooled below its saturation temperature, it can no longer remain a gas, but must return to its original form as a liquid. This latter stage can be brought about through condensation of the gas.

Therefore, in the cycle of the first physical change in state we reach an equilibrium, and in the cycle of the second physical change in state we return to an original equilibrium.

From the previous text it was determined that in the compression cycle, of the refrigeration cycle, it is necessary that we take the refrigerant gas which is hot on discharge from the compressor (containing the latent heat of vaporization from the evaporator plus the heat of compression from the compressor, etc.) and cool it, thus condensing it back to a liquid state from which it can be re-used in the evaporator.

This condensing operation, involving the removal of heat, must be done at a rate commensurate with the pressure in the system.

Refer to Fig. 54. Hot gas from the compressor discharge enters at the top of the shell and cascades down, around within the shell over the water tubes. The water being circulated through the tubes being colder than the temperature of the gas brings about a transfer of heat from the refrigerant gas to the water, thus raising the temperature of the water.

When a sufficient amount of heat in the hot gas has been transferred to the water in the tubes, through the tube walls, it starts to condense on the tube surfaces and falls as a liquid to the bottom of the shell. There it collects to be expelled through the liquid line connection to the liquid line and ultimately on through the expansion valve to the evaporator.

Because the interior of the shell is at the same pressure as the condensing temperature, this ejection through the liquid line takes place.

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Servicing Automobile Air Conditioners

(Vol. 3)

BY C. DALE MERICLE

PARKOMAT

Parkomat Mfg. Co., Inc.
2000 S. Akard St.
Dallas 15, Texas

FIG. 1 — Evaporator assembly of 1958 Parkomat under-dash unit. Equip-aire unit is essentially the same.

Two under-dash air conditioners comprise this manufacturer's 1958 line. One is marketed under the "Parkomat" name; the other is called the "Equip-aire."

With respect to basic design and general appearance, the two units are identical, so the description of components and service instructions apply equally well to both.

The Parkomat unit follows the conventional arrangement of having the condenser in front of the car radiator, the compressor mounted on the car engine and driven through a magnetic clutch which is thermostatically controlled, and the evaporator case (Fig. 1) attached beneath the dash.

Refrigerant-12 is standard.

Compressor

Most of these units employ the Tecumseh HH or low-boy compressor.

The Warner magnetic clutch is standard equipment.

Condenser

Condenser is mounted directly in front of the car radiator.

Located beside the condenser is a combination receiver-drier unit.

A sight glass is mounted on top of the receiver.

Evaporator

Evaporator case assembly of the Parkomat unit consists of the evaporator coil proper, thermostatic expansion valve, fans, air outlets, and controls.

There are two adjustable round air outlets on the front of the case. A third air outlet is provided in the top center portion of the case front but has no adjustment as to direction of air discharge.

Thermostatic expansion valve employed on the Parkomat unit is pre-set at the factory, so the superheat setting cannot be adjusted in the field.

Two propeller type fans are used on Parkomat units.

Controls

Controls are mounted on the front of the evaporator case. They permit control of compressor and fan operation as well as defrosting.

A rotating knob attached to a thermostat regulates cycling of the magnetic clutch and thus compressor operation. At extreme left (counter-clockwise) position, this control puts the unit into "off" setting.

Turning this knob clockwise brings the thermostat and magnetic clutch into operation. Colder settings of the thermostat are to the right (clockwise). At the extreme right (clockwise) "manual" setting of the clutch is engaged constantly so the compressor runs all the time, except as noted below.

There are also five pushbutton controls directly above the thermostat knob. Pressing the button at extreme left turns the fans off. The three center buttons provide high, medium, low speed fan operation. Button on extreme right is the "defrost" button.

When the thermostat knob is set in "manual" position for constant operation of the compressor under extreme conditions, pressing the "defrost" button will defrost the evaporator, which will probably be required from time to time.

Pressing the defrost button breaks the circuit to the magnetic clutch, thus causing the compressor to stop, and puts the blowers on high speed. When defrosting is completed, which usually takes less than 60 seconds, one of the three fan speed buttons must be pressed. This restores the circuit to the clutch and the fans operate at the desired speed.

SERVICE HINTS

Evacuating System

Parkomat systems should be evacuated following initial installation or opening the system for repairs prior to charging and operating.

This can be done with a separate vacuum pump or by using the compressor itself, the company advises.

Charging System

Units should be charged through the low side with refrigerant in the vapor state.

Full charge is 2 lbs. of Refrigerant-12.

Trouble Shooting

Service procedures common to under-dash systems using an adjustable thermostat to cycle a magnetic clutch will apply to the Parkomat and Equip-aire units, with the exception of the control arrangement for defrosting the evaporator when the clutch is under manual control, as noted above.

(Next make to be discussed in this series will be International.)

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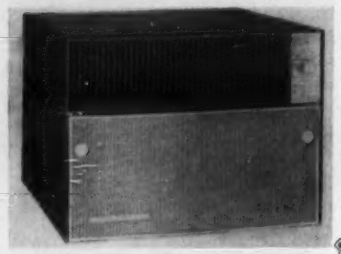
"MASTERPIECE" room air conditioners by Kelvinator provide maximum comfort and convenience. The deluxe line includes nine models. The new models have combination of electro-magnetic air filter and the "Filtermatic Signal" which automatically tells the user when the filter requires cleaning.



LIGHT enough to be carried from store to family car and into the home, the Kelvinator portable room air conditioner is said to have more than enough cooling capacity for a 12 by 12 room.

Kelvinator Line--

(Concluded from Page 1, Col. 2)

ing to E. B. Barnes, general sales manager for Kelvinator Div. of American Motors Corp.

The Kelvinator electro-magnetic filter "removes 95% of airborne particles because it is electrostatically charged to attract and hold the smallest particles, even smoke solids," Barnes said.

The Kelvinator Filtermatic Signal automatically tells the homemaker when the filter has become clogged with dirt and dust. A small rectangular indicator on the front of the unit changes from white to red when the filter is dirty.

"This signal is large enough to perform its function, but is included in the 'Style Mark' insignia so that it is unobtrusive in the over-all styling of the unit," Barnes said.

Two-directional cooling — another feature of the line—circulates cool, clean air into all parts of the room and even into adjoining rooms at the same time, it was pointed out.

There are Kelvinator "balanced comfort" models for every home, Barnes said.

The deluxe Masterpiece series includes nine models, ranging from 1 hp. and more than 10,000 B.t.u.h., to 2½ hp. and more than 19,000 B.t.u.h.

All Masterpiece models have the electromagnetic air filter and the Filtermatic Signal. Other features include two-directional cooling, automatic thermostat, controls concealed behind louvers which lift up easily, and fresh air and exhaust vents, plus a two-speed fan.

The 1 and 1½-hp. models in the Masterpiece series are 15¾ in. high, 26⅜ in. wide, and 20 in. deep. The 2 and 2½-hp. models are 17¾ in. high, 26⅜ in. wide, and 29⅝ in. deep.

The three new Space-Saver models are 23 in. wide, 14 in. high, and 15 in. deep "with virtually no overhang inside the room, or outside the home," Kelvinator said, adding: "Compact dimensions and short overhang permit draperies and curtains to be drawn across Space-Saver models when not in use."

Controls are grouped on the front of the "Style Mark" cabinet with eight settings from "cold" to "coldest."

Two-directional cooling, two-speed fans, fresh air vent, and adjustable thermostat are other features.

Space-Saver models have 1-hp. units, delivering from 6,700 to 8,600 B.t.u. The series includes a 115-volt model for 12 amperes, a 115-volt model for 7.5 amperes, and a 230-volt model.

The portable room air conditioner has a ½-hp., 4,200 B.t.u. cooling capacity. "It can be carried from the store to the family car, and into the home," the company said.

"Its compact size and 65-lb. weight make it ideal for average-size bedrooms. The special mounting frame is easy to install, and anchors the unit securely in place. The frame forms a tight seal against bugs, air, wind, and rain."

The portable model has an adjustable thermostat, cleanable filter, and a dial control for all temperature settings. It is 16 in. wide, 12 in. high, and 16 in. deep. The portable operates on a 115-volt 7.5-ampere circuit.

Four models make up the "Custom" series. All have the Style Mark design and resemble the Masterpiece series in exterior appearance and dimensions.

There are two 1½-hp. models, a 2-hp. and a 2½-hp. model. All have two-directional cooling, an automatic thermostat, dial controls, and fresh air vents.

The 1½-hp. models are 15¾ in. high, 26⅜ in. wide, and 20 in. deep. The larger models are 17¾ in. high, 26⅜ in. wide, and 29⅝ in. deep.

There are four reverse cycle all-season models for areas where heating is desirable. The two reverse cycle models in the Masterpiece series have 2 and 2½-hp. capacities. The two Custom series reverse cycle models have 1 and 1½-hp. capacities.

Barnes said the 1959 Foodarama is taller and 7 in. slimmer, but 2 cu. ft. larger in capacity than earlier models.

COLD MIST freshener, a completely enclosed compartment in new 1959 Kelvinator Foodarama, retains the natural flavor and moisture of foods by combination of high humidity and proper low temperature. The full-width compartment can be used for storing left-overs which need not be covered, as well as salad greens, fruits, and vegetables. Below Cold Mist Freshener is a special "package pantry" where pre-packaged fruits and vegetables can be stored.

It has an 11.7-cu. ft. automatic defrosting refrigerator with many new storage features; an upright home freezer that holds 207 lbs. of frozen food; fan-cooled refrigeration system for completely built-in installation; compact dimensions — 41 in. wide, 63 in. high, and 25 in. deep—plus square-corner "Style Mark" design.

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UNIT COOLERS for every application...

Radial Unit Cooler. Eight compact redesigned models constructed with heavy gauge hammered aluminum throughout for light weight and longer life are available. The new McQuay Radial unit cooler features a hinged drain pan for easy installation and maintenance.

Two Way Unit Cooler. Ten models designed for cooling back bars, reach-ins and other limited space applications. Units may be wall or ceiling mounted and are U.L. approved.

With the addition of the new, hammered aluminum Space-Miser unit coolers, one for normal and one for low temperature, McQuay now offers you a complete line—a unit cooler for every application. Five models and a total of 37 sizes let you select exactly the model and size for every job.

The McQuay Radial unit coolers and the Two-Way unit coolers have been restyled, and also feature heavy gauge hammered aluminum cabinets for longer life, easier handling and quick installation.

For the most complete line, and complete satisfaction—it's McQuay every time. And, remember, *McQuay Means Quality.* See your McQuay wholesaler in or near your city, or write direct to McQuay, Inc., 1607 Broadway St. N.E., Minneapolis 13, Minn.

Pacemaker Unit Cooler. Ten compact sizes available in single, double or triple fan and motor units offering efficient low cost cooling for walk-in coolers where temperatures above 35 degrees are required. Continuous galvanized steel, bonderized and enameled cabinets provide the finest corrosion resistant assembly available. All McQuay Pacemakers are equipped with a built-in heat exchanger, mastic coated drain pan, directional louvers and slotted hangers for easy installation.

Low Temperature Space Miser Unit Cooler. Three models designed to balance with nominal ⅓, ½ and ¾ H.P. low temperature condensing units. Normal temperature McQuay Space Misers are also available in four models designed to balance with nominal ⅛, ¼, ⅓ and ½ H.P. condensing units.

McQuay Means Quality

McQuay units feature the exclusive Ripple-Fin coils which create maximum turbulence and have wide, full fin collars that act as automatic spacers to form a tube around the coil tube for positive, permanent bond, greatest heat transfer and protection.

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